# General Electric 'Prop' Men Set the Stage for a Dealer Show in Indianapolis Theater

(1) Larry Higgins (left) of the C. B. McAllister Co., designer of the stage equipment used in the General Electric convention shows this year, enlists the help of R. W. Watts and R. E. Brogan of the G-E sales promotion division in erecting the stage at the meeting held by Electric Appliances, Inc., G-E Indianapolis distributor. (2) H. E. Warren, sales promotion, Electric Appliances, Inc.; C. C. Barnes, sales promotion division, G-E merchandise department, Mr. Brogan, and Mr. Watts, take a rest after their strenuous labors in putting together the "props." (3) Howard May of the G-E production division (in the rear) and G. D. Kobick, manager, G-E apartment house division, listen to words of wisdom from A. F. Head (right), distributorship manager.

## Students Learn Air Conditioning Theory And Practice at G-E Schenectady School

(*Concluded from Page 1, Column 2*)

the entire training course was divided into four quarters of one week each. These units consisted of five days of instruction, with an examination on Saturday morning. Saturday afternoons and Sundays were free.

Evenings during the final week the students were addressed by Owen D. Young, chairman of the board of the General Electric Co.; T. K. Quinn, vice president of the General Electric Co. and chairman of the appliance committee; J. E. Donovan, manager of the General Electric air conditioning department; and George F. Taubeneck, editor of ELECTRIC REFRIGERATION NEWS.

Lectures and class room work were held in the mornings. Afternoon sessions were devoted to laboratory and field work. Evenings were given over to study, basketball, group singing, and other recreation.

Following is a schedule for a typical day at the Sales Engineering School:

7:00 A. M.—Revielle.
7:30 A. M.—Breakfast.
8:30 A. M. to 12:45 P. M.—Lecture and Class Room Work.
1:00 P. M.—Luncheon.
1:30 P. M. to 5:00 P. M.—Instruction in Laboratory and Field Problems.
5:15 P. M. to 6:15 P. M.—Physical Instruction.
6:30 P. M.—Dinner.
8:00 P. M.—Study Hall.
10:30 P. M.—Taps.

Lectures given during the first quarter were: air and water vapor—by Messrs. Brown and Dart; composition, properties, laws, and psychrometry—Mr. Levine; heat transmission—Messrs. Durbin and Hewett; heat transmission conduction, convection, radiation, evaporation, and condensation—Mr. Karsten.

Flow of fluids was discussed by Messrs. Howes and Mckinley. Also speaking on the flow of fluids, Mr. Berry explained fundamental theory on the flow of water, steam, air, oil, and the measurement of these fluids.

Topics covering sound and vibrations were subjects of the addresses of Messrs. Mears and Partington, and Messrs. Berry and McLenegan.

Lectures in the second quarter of the course included: fuel and combustion, by Messrs. Brown, Dart, and McLenegan; mechanical equipment for air conditioning—Messrs. Durbin and Hewett; general study of heat generating, refrigerating, humidifying, cooling, dehumidifying, filtering, and circulating devices and their combination in assembly, including accessories—Mr. Martin.

Messrs. Howes and McKinley presented tables and data on code requirements. Other aspects of code requirements were treated by Mr. Martin, who discussed the interpretation of heating, cooling, and electrical codes; and Mr. Karsten, whose topic was "standard terms and short cuts in the use of tables."

Other lectures included: application surveys; sales and engineering surveys and how to make them—Messrs. Mears, Partington, and Karsten; heat gain and heat loss—Messrs. Stribling and Urban; making heat gain and heat loss calculations—Mr. Levine.

Choosing systems, unit systems, central plant systems, radiator heating systems, and split systems were explained by Messrs Brown and Dart. Also speaking on the choice of systems, Mr. Berry dealt with the interpretation of the application survey, and choosing the right equipment.

Further instructions covered first principles of electricity for the sales engineer; electro magnetism, motors, and controls—Mr. McLenegan; multiple furnace installations, commercial hot water, and industrial applications—Messrs. McLenegan, Scherff, and Welch.

Costs of air conditioning—the importance of price, an analysis of initial installation and operating costs were subjects discussed by Messrs McLenegan, Scherff, and Welch.

In the fourth quarter of the course the following lectures were given: special sales features, answers to the question, "Why should I buy General Electric air conditioning"—Mr. Thurston; the technique of selling and sales analysis—Mr. Opal; the use of sales and advertising material—Mr. Opal.

Following students enrolled for the course:

A. Dufty, E. B. Gerry, T. W. Halloran, R. Hanner, H. Hudson, A. R. Knowlton, G. Landon, R. T. Ley, E. Lovewell, R. F. Munson, R. C. Parsons, G. Rideout, F. A. Royce, C. J. Ruoff, W. F. Schuyler, A. E. Wallgren, W. Westover.

W. L. Baie, K. L. Bonebright, J. H. Cavanaugh, W. S. Clewell, R. W. Evans, M. B. Griffin, G. E. Grubbs, G. D. Haberer, B. E. Hoger, P. Kettenburg, G. G. Kraft, M. J. Olson, M. G. Parke, W. F. Tucker, H. VanSchaack, H. Watts, P. B. Wright.

R. J. Barnes, F. M. Barrett, M. R. Bird, Zeno H. Brown, Fred Deaton, S. R. Guignard, G. S. Kimball, B. L. Palmer, R. E. Paxton, H. L. Pullon, M. W. Rice, George Richmond, W. A. Styron, F. B. Turner, J. S. Wilson.

H. W. Beecher, J. V. Berger, E. L. Bowerman, B. F. Carter, Ira P. Fulmor, Eugene George, J. B. Grant, M. P. Higby, P. N. Layton, J. J. Morrison, V. M. Norrish, C. A. Pangborn, Philip Perry, R. T. Riley.

C. B. Baker, J. P. Barnes, F. C. Barton, F. K. Froehlich, H. A. Gale, C. H. Goetz, R. B. Ley, F. G. Olson, F. J. Partridge, J. E. Rochette, R. J. Rowe, B. R. Sanborn, P. T. Sealey, G. A. Swanburg, W. A. Thompson.

Boyd Allen, C. L. Benn, J. E. Broderson, B. T. Carroll, M. D. Farden, J. A. Ferguson, J. J. Fitz Gerald, H. G. Graham, H. H. Hall, C. J. Hamlin, F. Ibsen, P. A. McArdle, G. E. Murphy, Oram Sams, E. E. Stewardson, H. A. Strickler, C. G. Topping.

U. B. Burchette, E. J. Carle, R. A. Furniss, J. P. Grimwade, J. J. Kelly, A. G. McCullough, C. Margerum, Akron Mack, H. S. Mensche, F. E. Maddox, P. L. Morrissey, R. D. Musselman, M. A. Rufe, R. S. Stuart, W. R. Smith.

J. G. Allison, C. R. Baugh, Roy Black, George Cohn, R. S. V. Elliott, A. E. Giguere, Mack Gomperts, H. O. Hallberg, L. F. Hammerstein, Irwin Jalonack, C. C. Kastner, Jr., C. W. Little, R. S. Oakleaf, C. M. Schwerin, Jr., W. A. Sinclair, C. D. Smith, J. A. Thomas, C. W. Walter, F. A. Waters, Isadore Wexler, W. H. Wheeler.

E. L. Beard, D. S. Cooper, O. G. Floyd, W. H. Fuller, Jr., J. F. George, Jr., J. C. Herren, R. Ingram, E. S. Jaggars, J. B. Johnson, J. E. Leininger, C. H. Miller, L. Miller, Jr., C. L. Moss, Jr., G. Mussen, S. P. O'Bannon, L. J. Van Sickle, J. V. O. Weaver, H. Wilson.

J. T. Ames, W. C. Baer, Edward Dodez, W. W. Fiala, H. W. Groot, A. O'Connor, F. M. Overbacker, A. I. Paulson, E. L. Siekmann, E. W. Sprague, Robert Strong, E. C. Turvene, H. E. Uland, Curt Wilhelmi, C. H. Wolfe, M. H. Yates, D. J. Zabner, A. H. Ziemer.

## L. H. Curtice, Former Officer Of Nema, Opens Office

NEW YORK CITY—Leon H. Curtice has opened an office at 101 Park Ave., as manager for trade associations, consultant on group activities and trade relations, and code authority executive.

Mr. Curtice was formerly with the National Electrical Manufacturers Association where he organized the National Electric Cookery Council.

## 'Candid Camera' Is Used As Prospect-Getter

ELKHART, Ind.—The candid camera applied to the electrical appliance sales field led to the sale of three refrigerators, two washers, and one oil burner, at a cost of less than $13 and within four days, state officials of the Hudson-Essex Sales Co., Norge dealer here.

The dealer had a photographer take random pictures on the streets of the city and hand out registration cards.

Sixty-seven out of the 96 individuals snapped appeared at the Norge showrooms, 40 of whom were prospects.

## Alabama Power Pushes Constitutionality Test On TVA Power Plan

BIRMINGHAM, Ala.—Counsel for a group of preferred stockholders of the Alabama Power Co. has introduced documentary evidence before Judge W. I. Grubb to lay the foundation for an attack on the constitutionality of the Tennessee Valley Authority's electrification program, in a petition for an injunction to halt the government agency's power plans.

The stockholders are seeking to restrain the power program and application of "yardstick" rates in 14 northern Alabama cities and towns.

Judge Grubb recently denied a motion to limit the testimony and evidence to the Alabama Power Co. contracts, opening to inquiry the authority's power program in other states. He has issued a subpoena for the minutes of the TVA's meetings.

Counsel for 14 Alabama towns has moved to dissolve a temporary injunction recently issued by Judge Grubb, restraining them from accepting funds from the PWA to build competing distribution systems.

The TVA, placing its first contracts for major electrical equipment, has awarded to the Westinghouse Electric & Mfg. Co. a $1,000,000 order.

THE NEWSPAPER OF THE INDUSTRY

# ELECTRIC REFRIGERATION NEWS

Registered U. S. Patent Office

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## Chrysler to Sell Conditioners for All Purposes

### Airtemp's Self-Contained 1/2-Ton Unit Will Sell for $385

DETROIT—That Chrysler will have an extensive air-conditioning line on the market this year was demonstrated when distributors for Airtemp, Inc., sales organization for Chrysler's air-conditioning products, met here last week for the first time, and saw the products which Airtemp has ready for quantity production.

From a very small conditioning cabinet designed especially for hotel rooms and small offices, the line ranged upward to heavy-duty air-conditioning equipment with compressors up to 150 tons capacity.

Leading the line is a self-contained air-conditioning unit of ½-ton capacity, to retail for $385, which needs only electrical and plumbing connections to operate. A ¾-ton room-cooling unit will also be featured.

Heavy promotion will be placed behind the small conditioning cabinet, which will be advertised at a retail price of $75—minus the compressor. When connected to refrigeration and heating sources, it will furnish year-'round air conditioning for a small room.

Heat will be supplied for this unit by the regular heating system for the room. If there is a sufficient supply of cold water, the latter will be used for refrigeration; otherwise it will be

(*Concluded on Page 2, Column 5*)

## Kelvinator Widens Duties of Field Men

DETROIT—Fifteen district sales managers will henceforth be responsible for sales operations in their various territories on all Kelvinator products including household and commercial refrigeration, air conditioning, beverage cooling, and oil burning equipment, it was announced last week by H. W. Burritt, Kelvinator vice president in charge of sales.

The district managers who have been given this responsibility were named by Mr. Burritt as follows:

M. S. Bandoli, C. L. Barlow, Otto Boyer, C. R. Brogan, C. V. Calkins, J. L. Conover, J. F. Crossin, H. A. Dahl, George Ewald, Lawrence Klein, L. L. Langley, Murray McLeish, C. D. Mitchell, H. L. Percy, and J. B. Reeves.

## Guild Manages Vilter's Eastern Division

MILWAUKEE—H. C. Guild, formerly consulting engineer and associate sales manager for the A. M. Byers Co., has been appointed manager of the eastern regional division of the Vilter Mfg. Co. of this city.

Mr. Guild is known in the engineering field as a designer of evaporators and as an author of papers on the improved design of evaporating coils and condensers. The Vilter company has arranged to build many of his apparatuses upon which there are patents issued or pending.

## Norge Adds Model; Makes Changes In Cabinet

DETROIT—Addition of a 6.21-cu. ft. model and the incorporation of a number of cabinet refinements characterize the 1935 line of Norge electric refrigerators, now being shown to dealers and prospects at a series of meetings throughout the country.

Twelve models are being shown, ranging in size from the T-20 of 2 cu. ft. net capacity, to the P-1117 with 11.17 cu. ft. of storage space, and in price from $79.95 to $369.50.

Six are available with porcelain exteriors, and two of these, in the 6- and 7-cu. ft. sizes, may also be had in green, peach, and tan color combinations with the new Norge ranges.

The complete Norge line, with food capacities and *suggested* zone 1 list prices, follows:

T-20 (2-cu. ft. net storage space), $79.95; E-425 (4.25 cu. ft.), $119.50; L-519 (5.19 cu. ft.), $149.50; P-519 (5.19 cu. ft.), $174.50; L-621 (6.21 cu. ft.), $183.50; P-621 (6.21 cu. ft.), $213.50; L-720 (7.2 cu. ft.), $214.50; P-720 (7.2 cu. ft.), $249.50; L-804 (8.04 cu. ft.), $254.50; P-804 (8.04 cu. ft.), $289.50; P-953 (9.53 cu. ft.), $319.50, and P-1117 (11.17 cu. ft.), $369.50.

Model T-20, the Norgette or lift-top model, has a shelf area of 5.25 sq. ft. Freezing compartment contains two ice cube trays, making 2¾ lbs. of ice in 36 cubes.

Model E-425 has three shelves with a total area of 8.49 sq. ft., and a

(*Concluded on Page 2, Column 1*)

## Air Conditioning Made Big Strides During 1934 in Houston

By Phil B. Redeker

HOUSTON, Tex.—Thirty-one air-conditioning systems employing refrigeration were installed in Houston business establishments and private residences during 1934, reports E. F. Wilson of the Houston Lighting & Power Co., who recently completed a survey of air-conditioning installations in this city.

The total of 31 installations includes only those systems that were installed primarily for the physical comfort of human beings, states Mr. Wilson.

There are approximately 200 industrial applications of air conditioning in Houston—primarily for fur vault storage, banana storage and ripening, bakery processing, candy manufacturing, printing processes, and laboratories—which are not included in the survey, which is published in full on page 4 of this issue, says Mr. Wilson.

Installations made in 1934 more than doubled those made in 1933, and nearly equaled the number of installations made in all the years previous to 1934, Mr. Wilson's survey shows.

Most notable gain, in number of installations, from the standpoint of

(*Concluded on Page 4, Column 1*)

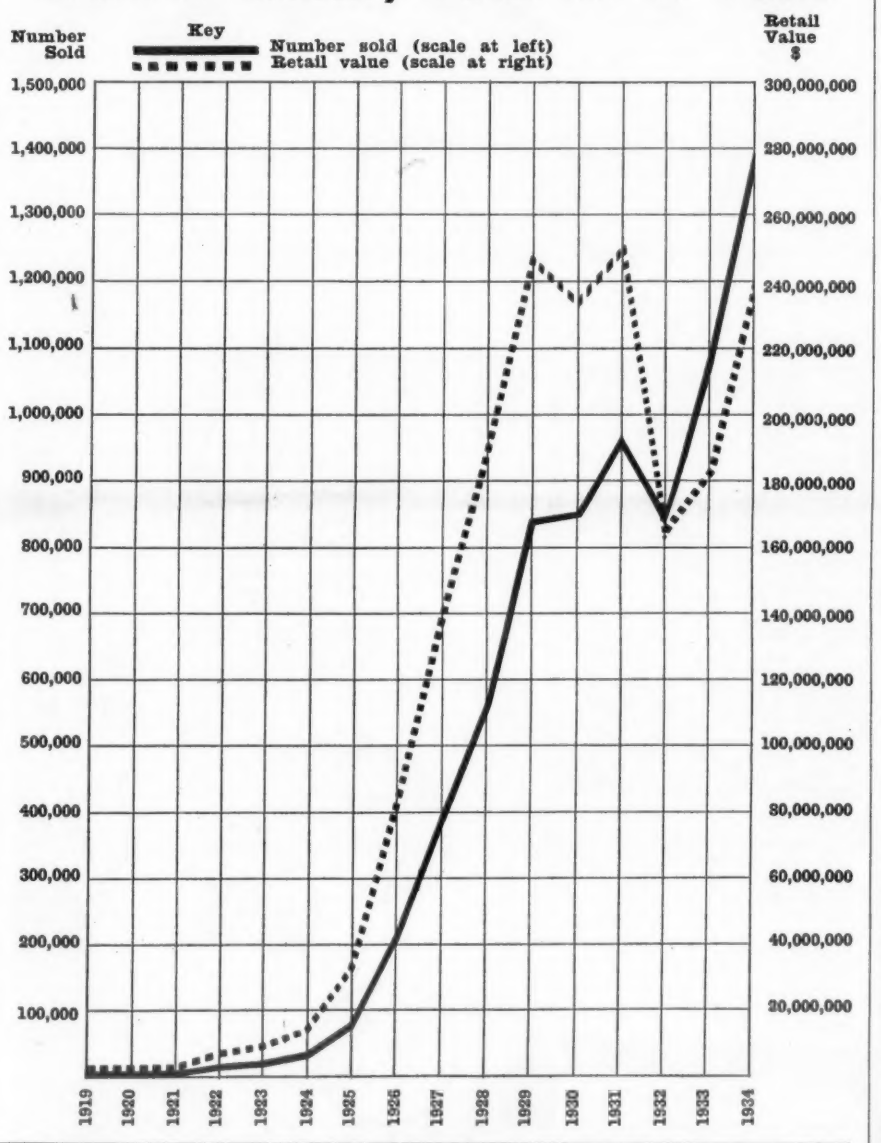
## Baltimore Utility Adds Second Line

BALTIMORE — For the first time in its years of electric refrigeration merchandising, Consolidated Gas Electric Light & Power, is now selling two makes of refrigerators, having been appointed a Westinghouse dealer.

## Market for Household Electric Refrigerators 28.2% Saturated

| | |
|---|---|
| Estimated total sales of household electric refrigerators (including 107,000 exports) by all U. S. manufacturers during 1934 | 1,390,000 |
| Estimated average retail price | $172 |
| Estimated total retail value | $239,080,000 |
| Estimated total number of household electric refrigerators sold by all U. S. manufacturers up to Dec. 31, 1934 | 7,275,000 |
| Deduct stocks in hands of dealers and distributors | 125,000 |
| | 7,150,000 |
| Deduct total exports up to Dec. 31, 1934 | 450,000 |
| | 6,700,000 |
| Deduct total obsolescence and replacement | 875,000 |
| Estimated total in use in U. S. on Jan. 1 1935 | 5,825,000 |
| Divide by number of wired homes in U. S. | 20,693,984 |
| Percentage of market saturation | 28.2 |

## Chart of Industry Sales for 16 Years




## Stratton & Terstegge to Distribute York Line

LOUISVILLE—Stratton & Terstegge Co. here has been appointed as distributor in this territory by the York Ice Machinery Corp., manufacturer of commercial refrigeration machinery and air-conditioning equipment.

A. C. Rocerto has been named by the firm as local supervisor of sales.

## Single Order Placed for 380 Gibson Refrigerators

NEWARK—The Eastern Electrical Supply Co. here is claiming the largest single order for household electrical refrigerators in New Jersey, following the sale of 380 Gibson units to the Prudential Life Insurance Co. for installation in a new apartment house operated by the company.

## Final Estimates Make '34 Total 1,390,000 Units

### Totol Dollar Volume Hits $239,080,000, 30% Over '33 Value

By A. J. Cutting

DETROIT—Distributors and dealers throughout the world ordered 1,390,000 household electric refrigerators with a retail value of $239,080,000 from U. S. manufacturers during 1934, according to estimates just made by ELECTRIC REFRIGERATION NEWS on the basis of sales figures submitted by industry manufacturers of refrigerators and suppliers of parts. The estimated average unit price was $172.

Manufacturers' 1934 sales showed an increase of 310,000 refrigerators or 28 per cent over the previous high mark set in 1933 when 1,080,000 units were sold to distribution outlets. Total dollar volume of sales increased by $55,480,000 being 30 per cent above 1933, but still 4 per cent below the all time high dollar value record estimated at $248,970,000 for 1931.

Members of the Refrigeration Division of the National Electrical Manufacturers Association (Nema) made about 91 per cent of industry sales, accounting for 1,264,221 units during 1934. Companies whose figures were included in the year's total were Crosley, Frigidaire, General Electric, Gibson, Kelvinator, Leonard, Norge, Servel, Stewart-Warner, Sunbeam, Uniflow, Universal Cooler, and Westinghouse. Figures for Grigsby-Grunow Co., which made the Majestic refrigerator, were included for the first two months until membership was terminated when the company went into receivership. Trupar Mfg. Co., manufacturer of the Mayflower refrigerator, was included through

(*Concluded on Page 13, Column 1*)

## Dealers Study Scale Of Commissions

BIRMINGHAM, Ala.—Members of the Birmingham Electric Refrigeration Bureau are making efforts to control the "floater" type of salesman by adjusting the scale of commissions paid by local dealers.

A "gentlemen's agreement" between dealers is being worked out, under terms of which dealers will not "steal" each other's salesmen, nor employ immediately a man who has been discharged for cause by another dealer. Under the plan, there must be an interval of at least 30 days in the man's employment.

"As the selling season approaches, the custom of a few salesmen is to

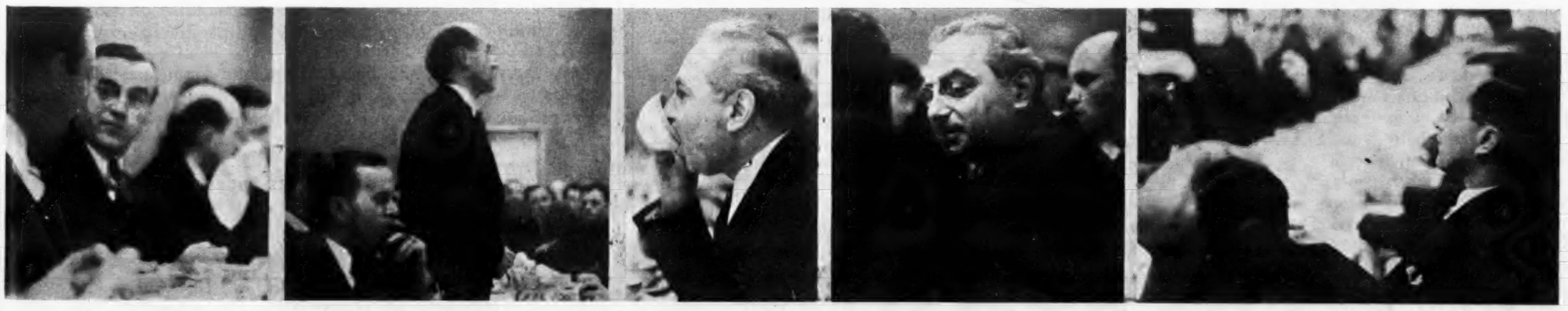
(*Concluded on Page 2, Column 4*)

## Kelvinator Shipments in Dec.-Jan. up $1,750,000

DETROIT—Value of Kelvinator refrigeration shipments in December, 1934, and January, 1935, was $1,750,000 more than shipments in the corresponding two months a year ago, announces R. I. Petrie, sales manager of Kelvinator Corp.

Kelvinator's plant out on Plymouth Rd., is running at full capacity to fill orders now on hand.

## Joe Donovan and Associates Conduct an Air-Conditioning School at Schenectady



(1) Joe Donovan, manager of the air-conditioning department of the General Electric Co., is seated between his chief, Vice President T. K. Quinn, and his first lieutenant, Elliott Harrington (bald, with handkerchief to mouth) at a General Electric air-conditioning institute banquet. (2) Mr. Donovan puffs contentedly on a cigar while Mr. Harrington speaks. (3 and 4) Chester Lichtenberg finds that it's good to the last drop and does some shrewd listening. (5) Mr. Harrington (lower left corner) and Mr. Donovan. Other photographs of the school are on pages 6, 16.

# Norge Adds New Model, Makes Some Available in Color; Refinements Made

(*Concluded from Page 1, Column 2*)

freezing compartment of two standard trays.

Models P-519 and L-519 have three shelves with an area of 10.03 sq. ft., and the freezing compartments have two standard and one rubber tray, and makes 7¼ lbs. of ice in 72 cubes. This model may be had either in porcelain (P-519) or lacquer (L-519).

Models P-621 (porcelain) and L-621 (lacquer) have five shelves with a total area of 12.63 sq. ft. Freezing compartments in these units have one standard, one rubber, and one deep tray, making 9¾ lbs. of ice in 96 cubes. These models are new, and had no corresponding sizes in 1934. Models in this size are also available in green, peach, or tan porcelain.

Models P-720 and L-720 have five shelves with a total area of 14.15 sq. ft. Ice making capacities are similar to those of the 6.21-cu. ft. model. In addition to a choice of porcelain or lacquer exterior, this size may also be had in green, peach, or tan.

Models P-804 and L-804 have shelf areas of 15.59 sq. ft. The freezing compartment has two standard, one rubber, and one deep tray, and makes 12⅜ lbs. of ice in 120 cubes. A choice of lacquer or porcelain exterior is offered.

Condensing unit on these models is of ¼-hp. size, and the evaporator is of five-tray capacity, so that 12⅜ lbs. of ice can be made as compared with 9¾ lbs. in the 1934 model.

Model P-953 has six shelves with a total area of 19.51 sq. ft. Freezing compartment has two standard trays, one rubber tray, and one deep tray.

This unit, too, has been equipped with a five-tray evaporator, raising its ice cube making capacity considerably over the 9¾ lbs. capacity of last year's model.

The model this year has two four-tray flooded type evaporators, replacing the dry expansion coil used in the corresponding model in 1934. The ice capacity has also been increased, last year's model having a capacity of 16 lbs.

Principal features of the 1934 Norges are largely unchanged, but the following refinements have been added to models above the 4.25-cu. ft. size:

The screws and washers holding down the top panel have been eliminated, the tops on all deluxe models now being held in place by concealed spring clips.

Door hinge on the food compartment is newly designed, having a spring which allows the door to be opened wider.

Door latch has been redesigned for light-touch opening, and the wood screw through the top has been eliminated.

Control knobs are of spherical shape, for more pleasing appearance.

Interior cabinet lighting has been improved by the replacement of the former 30-watt lamp with one of 60 watts.

A set of accessory dishes is provided at extra cost, including a bottle (or cocktail shaker), a mixing bowl, a butter dish, two leftover dishes, and a hydrovoir. With the exception of the latter, the dishes are of oven-proof pottery, and may be placed in the oven directly after removal from the refrigerator.

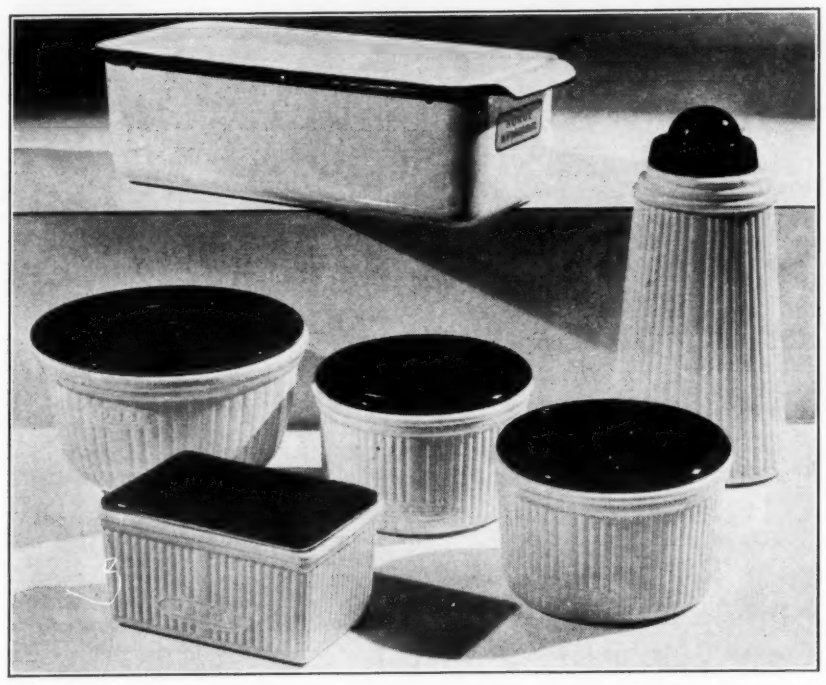
Minor changes have been made in the condensing unit. Inertia pulleys have been released from all models, the belt tightener used in 1934 has been eliminated, and a new motor with a torque reaction bolt tightener has been incorporated, to provide proper belt tension at all times.

## Key Specifications of Norge 1935 Models

| Model No. | T20 | E425 | L519 | P519 | L621 | P621 | L720 | P720 | L804 | P804 | P953 | P1117 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Overall Dimensions (in.)** | | | | | | | | | | | | |
| Height | 36 | 50¾ | 54¾ | 54¾ | 58¾ | 58¾ | 58¾ | 58¾ | 60¾ | 60¾ | 60⅞ | 60⅞ |
| Width | 22¾ | 23⅞ | 26⅞ | 26⅞ | 28½ | 28½ | 31½ | 31½ | 32½ | 32½ | 40⅞ | 48⅝ |
| Depth | 19⅞ | 20⅞ | 23¼ | 23¼ | 23¼ | 23¼ | 23¼ | 23¼ | 25¼ | 25¼ | 25¼ | 25¼ |
| **Storage Capacity** | | | | | | | | | | | | |
| Net food storage (cu. ft.) | 2.0 | 4.25 | 5.19 | 5.19 | 6.21 | 6.21 | 7.20 | 7.20 | 8.04 | 8.04 | 9.53 | 11.17 |
| Total shelf area (sq. ft.) | 5.25 | 8.49 | 10.03 | 10.03 | 12.63 | 12.63 | 14.15 | 14.15 | 15.59 | 15.59 | 19.51 | 23.11 |
| **Ice Cube Trays** | | | | | | | | | | | | |
| No. of trays | 2 | 2 | 3 | 3 | 3 | 3 | 3 | 3 | 4 | 4 | 4 | 7 |
| No. of cubes | 36 | 42 | 72 | 72 | 96 | 96 | 96 | 96 | 120 | 120 | 120 | 192 |
| Weight of cubes (lbs.) | 2¾ | 4½ | 7¼ | 7¼ | 9¾ | 9¾ | 9¾ | 9¾ | 12⅜ | 12⅜ | 12⅜ | 20¼ |
| **Price,** suggested retail (zone 1) | 79.95 | 119.50 | 149.50 | 174.50 | 183.50 | 213.50 | 214.50 | 249.50 | 254.50 | 289.50 | 319.50 | 369.50 |



# Accessory Dishes of New Design



Norge is offering this set of accessory dishes which includes the bottle (at the right) which can also be used as a cocktail shaker.

# Dealers Study Scale of Commissions

(*Concluded from Page 1, Column 5*)

make a connection with some dealer, obtain an advance for living expenses, and then, if things don't go just right, jump over to another dealer," says Ira F. Randall, bureau manager.

"We plan to keep a list of all salesmen in the bureau offices, so that any dealer can check on past connections.

A proposal for uniform commissions for salesmen has been made by R. L. Kurtz, manager of the Flint Refrigeration Co. His contention is that the present scale, which ranges from 8 to 15 per cent, might be a potent factor in causing salesmen to jump from one dealer to another.

Gordon Smith of the Mathews Electric Co. suggested that it would be difficult to establish a uniform commission, owing to the different types of outlets.

A graduated scale of compensation for salesmen according to their ability and length of service was suggested by Lucien O. Parsons of the Cable-Burton Appliance Co.

Barney DeRamus, sales supervisor of the Birmingham Electric Co., public utility, urged a sympathetic treatment of the salesmen, on whom, after all, the dealers must depend for business. He thought a graduated commission, based on production, would be best.

Charles R. Dew, head of the Leeds Supply Co., however, said the problem was not so much how much to pay the salesmen, but getting better men.

Final determination of the question has been left to a policy committee, headed by F. M. Jackson, Jr. John Shaw of the Moore-Handley Hardware Co. is president of the bureau.

# Airtemp Distributors Meet in Detroit

(*Concluded from Page 1, Column 1*)

necessary to make a remote installation of a compressor—at extra cost. Chrysler engineers suggest that in hotels it might be possible to hook this small cabinet up to the ice water supply.

Manufacturing facilities for the new units have been expanded, it was announced, and a new air-conditioning laboratory is now in operation at the Chrysler engineering headquarters.

Officials who took part in the convention included H. C. Jamerson, general sales manager of Airtemp, Inc.; E. S. Chapman, president of the Amplex division of Chrysler Motors; A. C. Staley, chief engineer in the air-conditioning division; and members of the engineering staff of the Chrysler Motors research laboratories.

Friday afternoon the visitors toured the Dodge and Amplex plants, and in the evening attended a banquet at the Statler hotel at which Walter Chrysler, Jr., K. T. Keller, president of Dodge Brothers Corp. and general manager of the Chrysler Corp.; and A. Vanderzee, sales manager of Dodge Brothers Corp., were the principal speakers.

## 2 Sell Refrigerators When Temperature Is 30 Below

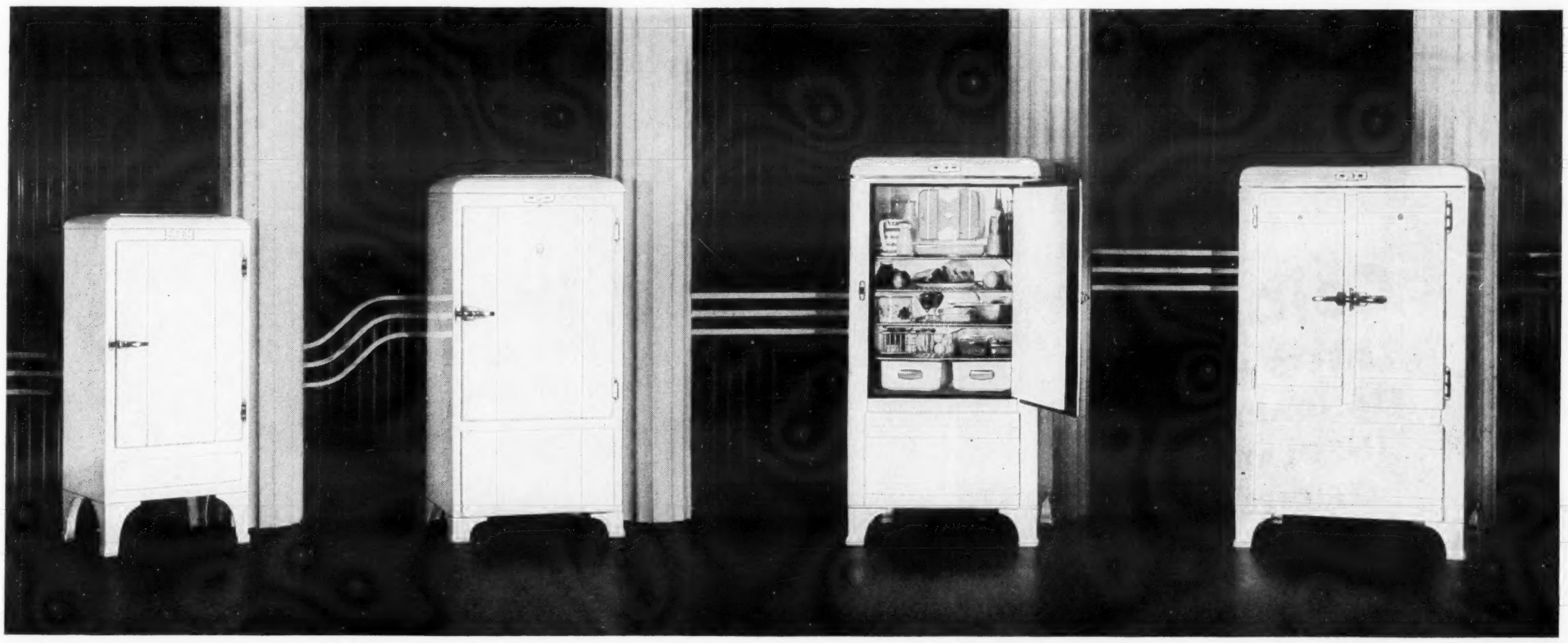
MINNEAPOLIS—With the temperature 30° below zero during a recent cold spell here, electric refrigerators were sold by Herbert Thompson and Russell Van Ornum, salesmen for the Beecher-Cummings Co.

# ANNOUNCING THE FRIGIDAIRE '35

***NOW IN THE FOURTH MILLION**

## 16 BEAUTIFUL NEW MODELS • EVERY ONE WITH THE SUPER FREEZER • A DEVELOPMENT THAT MAKES MORE COLD FOR USERS • MORE SALES FOR DEALERS

*The Standard Series Frigidaire '35* *The Master Series Frigidaire '35* *The Super Series Frigidaire '35* *The De Luxe Series Frigidaire '35*

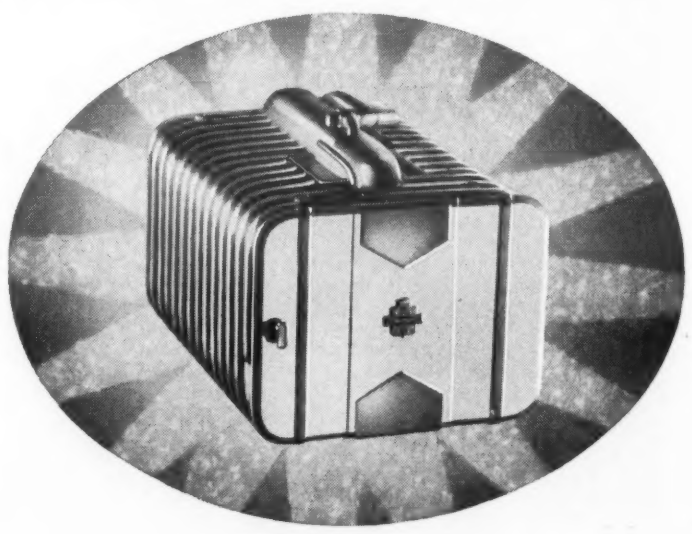


INTO the Frigidaire line for 1935 we've put the biggest assortment of selling points any line of refrigerators has ever had. Here are small Frigidaires, large Frigidaires and all sizes in between. And prices start way down low. You can offer every customer the size he wants at the price he wants to pay.

And no matter which model your customer selects, you will be able to recommend it as a refrigerator that will give him these two essentials: (1) Foods kept safely at temperatures below 50°. (2) Quick freezing of ice and desserts—even in the hottest weather.

The Frigidaire '35 performs these two services better. And here's why. Every model is equipped with that newest Frigidaire development—the Super Freezer.

The Super Freezer makes possible a Complete Refrigeration Service. It provides all the cold that's needed —*and the right kinds of cold*—all in the same cabinet. There's *fast freezing* for making ice cubes and desserts; *frozen storage* for meats and ice cream; *extra cold storage* for keeping a reserve supply of ice cubes; *moist storage* for vegetables and fruits; and *normal storage* below 50° for foods requiring dry, frosty cold.



*The Super Freezer*

These new Frigidaires are being presented to the public by the most impressive sales promotion and advertising campaign in the company's history. If you want to see real profits come swinging your way in 1935, investigate the Frigidaire franchise now. Frigidaire Corp., Subsidiary of General Motors Corp., Dayton, Ohio.

**Three million Frigidaires have been built and the manufacture of the Fourth Million has begun. No other refrigerator has achieved such amazing popularity.*

# Frigidaire '35

THE GENERAL MOTORS REFRIGERATOR

# Air Conditioning of Retail Stores Was Big Factor in 1934 Increase in Houston Jobs

(Concluded from Page 1, Column 2)

a single type of application, was in retail stores and sales floors. Thirteen systems were installed for such establishments in 1934, as compared with one installation in all preceding years.

Principal reason for this, says Mr. Wilson, was that in 1934 several of the stores found it necessary to redecorate, and the air-conditioning dealers, by showing them that air-conditioning systems could be installed at a much smaller cost while the store was being remodeled than at a later date, were able to clinch the sales.

The average size of the installations (in terms of connected horsepower rating) in 1934 was considerably smaller than in 1933. The following comparison shows how the average size of the installations has decreased from previous years:

| | No. of Installations | Total Connected Hp. | Average Hp. Per Installation |
|---|---|---|---|
| During 1934 | 31 | 658.5 | 21.2 |
| During 1933 | 12 | 792.5 | 66.0 |
| Before 1933 | 21 | 2,735.5 | 130.2 |

Data on air-conditioning installations in Houston, as collected by Mr. Wilson, is furnished in two tabulations. The first table is divided into various classifications, gives the name and address of the establishment in which the installation was made, the make of the equipment installed, the name of the distributor or dealer making the installation, the rating in tons of refrigeration and in connected horsepower, and the year in which the installation was made.

## Table 2—Summary of All Air-Conditioning Installations Made in Houston

| Type of Customer | Previous 1933 No. Instal. | Previous 1933 Hp. | Installed 1933 No. Instal. | Installed 1933 Hp. | Installed 1934 No. Instal. | Installed 1934 Hp. | Total Thru 1934 No. Instal. | Total Thru 1934 Hp. |
|---|---|---|---|---|---|---|---|---|
| Banks | 3 | 445 | .. | .. | 1 | 13 | 4 | 458 |
| Building & Loan | .. | .. | .. | .. | .. | .. | .. | .. |
| Barber Shops | 1 | 15.5 | .. | .. | .. | .. | 1 | 15.5 |
| Beauty Shops | .. | .. | .. | .. | 1 | 16 | 1 | 16 |
| Mortuaries | .. | .. | 1 | 11.5 | .. | .. | 1 | 11.5 |
| Offices | 2 | 13.5 | 9 | 93.5 | 6 | 32.5 | 17 | 139.5 |
| Office Buildings | .. | .. | 1 | 715 | .. | .. | 1 | 715 |
| Radio Studios | 1 | 7 | .. | .. | 1 | 5 | 2 | 12 |
| Residences | 1 | 1.5 | 1 | 1.5 | 5 | 46.5 | 7 | 49.5 |
| Cafeterias | 4 | 483 | .. | .. | .. | .. | 4 | 483 |
| Restaurants | 2 | 90 | .. | .. | 2 | 17 | 4 | 107 |
| Night Clubs | .. | .. | .. | .. | 1 | 64 | 1 | 64 |
| Clothing Stores | .. | .. | .. | .. | 6 | 117.5 | 6 | 117.5 |
| Shoe Stores | .. | .. | .. | .. | 3 | 26 | 3 | 26 |
| 25 Cents to $1.00 Stores | .. | .. | .. | .. | 1 | 153 | 1 | 153 |
| Jewelry Stores | .. | .. | .. | .. | 1 | 14 | 1 | 14 |
| Miscellaneous Stores | .. | .. | .. | .. | 2 | 22 | 2 | 22 |
| Theaters | 6 | 1,577 | .. | .. | 1 | 112 | 7 | 1,689 |
| Electric Co. Sales Office | 1 | 103 | .. | .. | .. | .. | 1 | 103 |
| **Total** | **21** | **2,735.5** | **12** | **792.5** | **31** | **658.5** | **64** | **4,186.5** |



# Table 1—Where Air Conditioning Has Been Installed in Houston

| Name and Address | Make | Installed By | Tonnage | Connected Hp. | Year Installed |
|---|---|---|---|---|---|
| ***Offices & Office Bldgs.*** | | | | | |
| J. M. West, Sterling Bldg. | Frigidaire | Robischung-Kiesling | 7.5 | 10 | 1933 |
| Dow Motor Co., 710 Walker Ave. | Frigidaire | Robischung-Kiesling | 2.5 | 3 | 1934 |
| S. R. Bertron, Electric Bldg. | Frigidaire | Robischung-Kiesling | 1 | 1.5 | 1931 |
| Frank Rogers | Frigidaire | Robischung-Kiesling | 1 | 1.5 | 1933 |
| Federal Trust Co., Shell Bldg. | Frigidaire | Robischung-Kiesling | 2 | 3 | 1933 |
| Cox & Blackburn, 3104 Main St. | Frigidaire | Robischung-Kiesling | 3 | 5 | 1933 |
| Capt. E. H. Buckner | Frigidaire | Robischung-Kiesling | 1 | 1.5 | 1933 |
| Texas Automatic Sprink. Co., 217 N. Main | Westinghouse | Texas Automatic Spr. Co. | 1 | 1 | 1933 |
| Judge Huggins, Chronicle Bldg. | General Electric | Edmundson Refrigeration Co. | 1.5 | 2 | 1934 |
| Don Cave | Carrier | Straus-Frank Co. | 1 | 1 | 1934 |
| Mossler Acceptance Co., Esperson Bldg. | Carrier | Straus-Frank Co. | 3 | 3.5 | 1934 |
| R. Straus, 1819 Travis | Carrier | Straus-Frank Co. | 1 | 1 | 1933 |
| York Ice Machinery Corp., 2201 Texas | York | York Sales Branch | 30 | 38 | 1933 |
| Humble Oil & Refining Co., Main & Polk | York | York Sales Branch | 500 | 715 | 1933 |
| W. West, Sterling Bldg. | York | York Sales Branch | 3 | 5 | 1934 |
| Mayor's Office, City of Houston | York | York Sales Branch | 3 | 3.5 | 1934 |
| Reed Roller Bit Co., Mack St. | Universal | Dixie Heating & Ventilating | 30 | 38 | 1934 |
| A. & P. Tea Co., 303 N. Main St. | Carrier | Carrier Engineering | 10 | 12 | 1932 |
| **Total 18 Installations** | | | **601.5** | **845.5** | |
| ***Residences*** | | | | | |
| R. G. Cullen, 217 Carson Ct. | Frigidaire | Robischung-Kiesling | 3 | 3.5 | 1934 |
| Jack Dies, 2103 Crawford | Frigidaire | Robischung-Kiesling | 1 | 1.5 | 1932 |
| J. Kiesling, 1806 Holman | Frigidaire | Robischung-Kiesling | 1 | 1.5 | 1933 |
| J. Evans, 808 Lovett Blvd. | Westinghouse | Texas Automatic Spr. Co. | 1 | 1.5 | 1934 |
| Ben Levy, Ben Milam Hotel | Kelvinator | Straus-Bodenheimer | 1 | 1 | 1934 |
| D. W. Hovey, 2222 Inwood Dr. | Carrier | Straus-Frank Co. | 1 | 1.5 | 1934 |
| H. R. Cullen, River Oaks | York | York Sales Branch | 30 | 39 | 1934 |
| **Total 7 Installations** | | | **38** | **49.5** | |
| ***Stores & Sales Floors*** | | | | | |
| Robischung-Keesling, Inc., 1348 Main St. | Frigidaire | Robischung-Kiesling | 10 | 13.5 | 1934 |
| Edmundson Refrig. Corp., 701 Waugh Dr. | General Electric | Edmundson Refrig. Co. | 6 | 8.5 | 1934 |
| The Fashion, 917 Main St. | Kelvinator | Straus-Bodenheimer | 30 | 39.5 | 1934 |
| Myrons, 505 Main St. | Servel | Way Engineering Co. | 9 | 12 | 1934 |
| Alaskan Fur Co., 606 Main St. | Carrier | Straus-Frank Co. | 15 | 19 | 1934 |
| Florsheim Shoe Co., 713 Main St. | Carrier | Straus-Frank Co. | 2 | 3.5 | 1934 |
| Corrigans Jewelry, 903 Main St. | Carrier | Straus-Frank Co. | 10 | 14 | 1934 |
| Chandlers Shoe Store, 717 Main St. | Carrier | Straus-Frank Co. | 8.5 | 13.5 | 1934 |
| Miller-Wohl Co., 917 Main St. | Carrier | Straus-Frank Co. | 15 | 20 | 1934 |
| Allen Shoe Co., 517 Main St. | York | York Sales Branch | 7 | 9 | 1934 |
| Mangel, 513 Main St. | York | York Sales Branch | 7 | 9 | 1934 |
| F. W. Woolworth, 609 Main St. | York | York Sales Branch | 135 | 153 | 1934 |
| Smart Shop, 905 Main St. | Universal | Dixie Heating & Ventilating | 15 | 18 | 1934 |
| Houston Ltg. & Power Co., 1016 Walker | Carrier | Carrier Engineering | 50 | 103 | 1929 |
| **Total 14 Installations** | | | **319.5** | **435.5** | |
| ***Theaters*** | | | | | |
| Delman, 4412 Main St. | York | York Sales Branch | 100 | 112 | 1934 |
| Kirby, 911 Main St. | | | 200 | 225 | 1927 |
| Majestic, 904 Rusk | Wittenmeier | Wittenmeier Co. | 240 | 270 | 1925 |
| Loews State, 1022 Main St. | | | 400 | 470.5 | 1927 |
| Metropolitan, 1016 Main St. | | | 325 | 375 | 1927 |
| Texas, 814 Capitol | Carrier | Carrier Engineering | 100 | 157.5 | 1925 |
| Iris, 612 Travis | Carrier | Carrier Engineering | 50 | 79 | 1925 |
| **Total 6 Installations** | | | **1,415** | **1,689.0** | |
| ***Restaurants & Night Clubs*** | | | | | |
| Simpson Dining Car, Main St. | Carrier | Straus-Frank Co. | 4 | 5.5 | 1934 |
| The Grove, Main St. Road | Carrier | Straus-Frank Co. | 50 | 64 | 1934 |
| Forum Cafeteria, 816 Main St. | York | York Sales Branch | 120 | 135 | 1931 |
| Texas State Hotel, Texas State Hotel | Wittenmeier | Dixie Heating & Ventilating | 37 | 45 | 1930 |
| Lamar Cafeteria, Lamar Hotel | Wittenmeier | Dixie Heating & Ventilating | 150 | 165 | 1928 |
| S. Houston Coffee Shoe, S. Houston Hotel | Universal | Dixie Heating & Ventilating | 9 | 11.5 | 1934 |
| Rice Hotel Cafeteria, Rice Hotel | Worthington | Wallace Plumbing Co. | 150 | 165 | 1927 |
| Rice Hotel Coffee Shop, Rice Hotel | Worthington | Wallace Plumbing Co. | 30 | 45 | 1927 |
| Slattens Cafeteria, Rusk | Frick | So. Engin. & Pump | 15 | 18 | 1932 |
| **Total 9 Installations** | | | **565** | **654.0** | |
| ***Radio Studios*** | | | | | |
| KPRC, Lamar Hotel | General Electric | Edmundson Refrigeration Co. | 3 | 5 | 1934 |
| KXYZ, Texas State Hotel | Wittenmeier | Dixie Heating & Ventilating | 5 | 7 | 1930 |
| **Total 2 Installations** | | | **8** | **12.0** | |
| ***Barber Shops*** | | | | | |
| Rice Hotel | Worthington | Wallace Plumbing Co. | 12 | 15.5 | 1927 |
| **Total 1 Installation** | | | **12** | **15.5** | |
| ***Beauty Shops*** | | | | | |
| Niccosia Beauty Shoe, Rusk Bldg. | General Electric | Edmundson Refrigeration Co. | 10 | 16 | 1934 |
| **Total 1 Installation** | | | **10** | **16.0** | |
| ***Mortuaries*** | | | | | |
| J. B. Earthman, 2420 Fannin | Frigidaire | Robischung-Kiesling | 10 | 11.5 | 1933 |
| **Total 1 Installation** | | | **10** | **11.5** | |
| ***Banks*** | | | | | |
| Gibraltar Savings & Building Association, 1201 Capitol | Frigidaire | Robischung-Kiesling | 10 | 13 | 1934 |
| National Bank of Com., 712 Main St. | Vilter | Dedman Foundry & Mach. | 150 | 180 | 1929 |
| Houston National Bank, 202 Main St. | Vilter | Vilter Mfg. Co. | 65 | 72.5 | 1928 |
| Second National Bank, 800 Main St. | Wittenmeier | Wittenmeier Co. | 175 | 192.5 | 1923 |
| **Total 4 Installations** | | | **400** | **458.0** | |

# M-H Develops Static Pressure Regulator

MINNEAPOLIS — Minneapolis-Honeywell Regulator Co. is now introducing new static pressure regulators designed for applications requiring accurate control of low pressures which normally do not exceed one inch of water above or below atmospheric pressure. These controls find their widest use in maintaining constant static head in air distribution systems.

These static pressure controls employ an inverted bell with liquid seal as a contact actuating means. A push rod integral with the inverted bell extends upward through the top of the cast bell-and-liquid housing into the head of the control where, through a simple lever mechanism, the movement of the bell, affected by pressure variation, is transmitted to the control contacts.

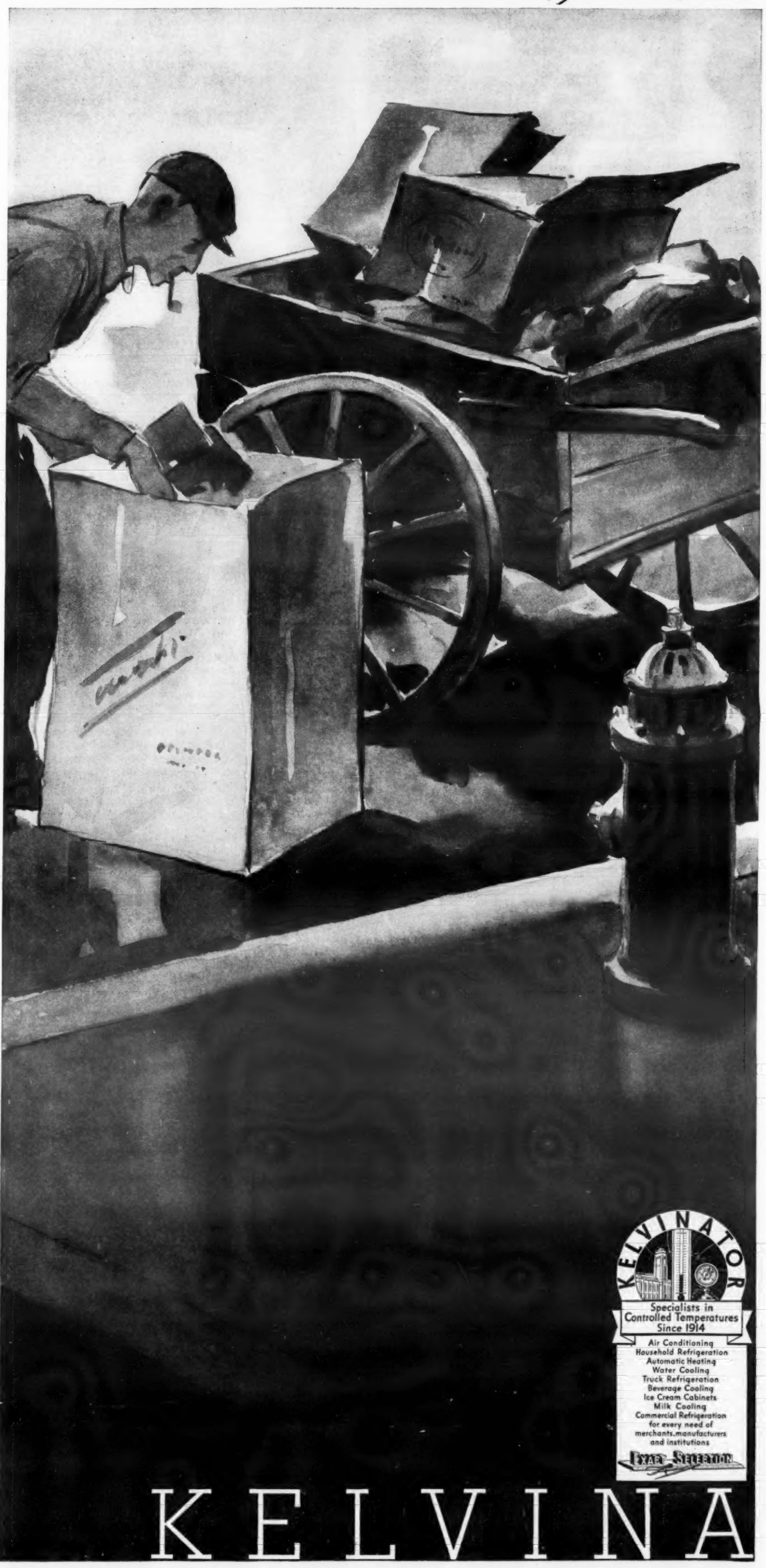
The static pressure controls may be used 1) as a positive or static pressure controller; 2) as a sub-atmospheric or "draft" controller; 3) as a differential controller.

These control functions determine the method of making the pressure connections to the regulator. For service in maintaining a constant positive static pressure, a single connection is made to either of the right or left hand tappings located on the side and near the top of the bell housing.

Where maintenance of constant sub-atmospheric pressure is desired, connection is made to the single tapping on the bottom of the bell housing. This tapping opens to a tube which projects up through the liquid fill into the chamber under the bell.

When the static pressure regulator is used as a differential or rate of flow controller, both the bottom and one of the upper tappings are used—the lesser of the two pressures is connected to the tapping on the underside of the bell housing and the greater pressure to one of the top tappings.

# Picking up what he can




## ...THAT'S NO WAY TO THINK OF A DEALER

If Kelvinator had to put the majority of its eggs in one basket, it would be in the dealer's basket. For we know that the point-of-sale contact is by far the most important in the whole machinery of distribution and merchandising.

Acting on this principle, Kelvinator has built more strongly into the dealer picture each year. When changes, improvements and additions to the line are made, the dealer's needs are always uppermost in our thinking, for dealer demands are the pulse through which we have been able to gauge public likes and dislikes.

For 1935 Kelvinator is providing the dealer with a complete line of 19 models in a range of capacities and prices which cover the consumer field as nearly 100% as possible. Kelvinator has developed for the promotion of this line a complete program of dealer activities so organized that in every month of the year the Kelvinator dealer is equipped to do a thorough-going merchandising job.

Kelvinator backs up its line and its dealer activities with a far-reaching advertising program which is constantly creating an ever greater public acceptance for the name. Kelvinator has every intention of staying constantly on the alert to make a Kelvinator franchise a refrigeration dealer's greatest asset . . . KELVINATOR CORPORATION, *14250 Plymouth Road, Detroit, Michigan. Factories also in London, Ontario, and London, England.*

• • •

*At the right is the Kelvinator 1935 Sales Progress Organizer—a comprehensive set of activities planned to bring prospects in ever-increasing numbers to the Kelvinator dealer.*

KELVINATOR

# PERSONALITIES

By George F. Taubeneck

## In a Blue and Penitent Mood

Readers have had occasion to make us feel like the well-known thirty cents recently. We never could figure out just why thirty cents should represent the depths of misery and despondency; but if they do, that's how we feel.

First of all was the stupid mistake in the headline on page 9 of the Feb. 13 issue. This head read:

JANUARY SHIPMENTS
FOR NORGE UP 13%

Underneath this head ran the following story:

"DETROIT—January shipments this year were 13 times greater than those for the same month of 1934, reports President Howard E. Blood of Norge Corp. Orders received by the company to date are 231 per cent of those for the same period last year."

There's a deal of difference between 13 per cent greater and 13 times greater, as any grammar school kid could tell us.

P'raps we'd all better get out our arithmetic books again, and persuade F. M. COCKRELL, who was once a schoolmaster but who now holds no brief for the Brain Trust professors, to conduct classes around here.

Major HOWARD BLOOD himself called that error to our attention. Our apologies to Major Blood, to all his associates, and to Norge dealers and distributors all over the land who made this fine record possible.

Next error was in the story about the establishment of separate household and commercial refrigeration sections in the National Electrical Manufacturers Association—also in the Feb. 13 issue. Nema has always had us Lost in a Fog anyway, so we aren't surprised. We're hoping to learn about Nema someday, though.

HALDEMAN FINNIE, able manager of the Refrigeration Division of Nema, clears it all up as follows:

"Because of the wide variety of products in the electrical manufacturing industry, Nema has a rather complicated structure. There are Divisions, Sections, Groups, and Sub-Groups. At present there are some 180 of these separate organizations within Nema, each with its own chairman.

"The Refrigeration *Division* has always covered the entire electric refrigeration field and will continue to function as a definite organization. All that was done last week was to create the Household Refrigeration *Section* and the Commercial Refrigeration *Section* as constituent parts of the *Division*.

"Although no such action is even remotely contemplated, the Nema structure would permit a later division of the Commercial Refrigeration Section into several Groups, each covering some particular product.

"Mr. Evans was last week elected Chairman of the Division and at a separate meeting was also elected Chairman of the Household Section.

"The Division, whose members will be the combined members of both Sections, will continue to function as the main body and hold regular meetings to consider all problems which affect both branches of the industry.

"The two Sections will hold separate meetings of their own to consider those matters which pertain only to their respective products."

* * *

## What Is Coming

Several readers have asked us for some sort of a pamphlet that would be a glorified reprint of the History of Refrigeration in 1934, which has been appearing on this page in the last few issues.

These requests haven't been sufficiently numerous to warrant the publication of a gold-embossed, leather-bound brochure, but we have been glad to oblige with collected tear-sheets. Furthermore, this review will appear—in somewhat condensed form—in the 1935 REFRIGERATION MARKET DATA BOOK, on which we are now working.

Other readers, not so factual-minded, have been gently prodding us to turn out an old-fashioned kolyum all about people again. "After all," they point out, "your page is entitled, 'Personalities.'"

And so it is. What's more, we intend to do sumpin' about it. Next week you'll read all about:

FREDRIC MARCH's brother, who knows a helluva lot about air conditioning.

WALTER P. CHRYSLER, JR., who also has some ideas about air conditioning and where it is going. Also a few words about JACK CHRYSLER, and about three former Frigidaire executives who are now working for the Chrysler family. And maybe a bit about K. T. KELLER, president of Dodge Brothers Corp., and A. VANDERZEE, general sales manager of Dodge, whose speech we almost wrote.

CAPT. BILLY SPARKS, who reads the Bible and drives 90 miles per hour.

Some recent train companions of ours: General Electric's TED QUINN, vice president in charge of appliances, and JOE DONOVAN, manager of the air-conditioning department; General Motors' President ALFRED SLOAN; a certain major in the United States infantry who has a good deal to do with the refrigeration industry; an earnest but bashful young man named Joe; and a vice president of the C. I. T. Corp., E. S. BRINSLEY, who believes in reservations but who didn't make the train.

What President E. G. BIECHLER of Frigidaire is liable to do real soon, and why Presidents GEORGE MASON of Kelvinator and HOWARD BLOOD of Norge had better look out for him.

Two very gentlemanly brothers who have helped another fine gentleman, WILLIS CARRIER, make the Carrier Corp. what it is today.

Two smart and rather *un*gentlemanly young men who—but by that time we'll be out of space and well into the next issue.

* * *

## What Was Missing

This week, however, we can't quite get over being really serious. In the first place, we've been bothering our heads every time we looked over that Review of 1934, sensing that something was missing. And so there was.

A story on the front page of this issue—all about General Electric's new model home—gave us the clue. Perhaps the biggest *stunt* news of the year was the building of model homes by many of the major companies.

These model homes are probably forerunners of another great industry, one in which specialty distributors and dealers will have a big share—prefabricated houses. Moreover, these model homes comprised the only really new sales promotion idea of the year. We'd forgotten about that entirely. So this week we give you:

* * *

## Model Homes

Realizing the sales appeal which a completely electrically equipped home would have for prospective users of refrigeration, air conditioning, and other electrical appliances, manufacturers in several sections of the country put up model homes during 1934. These exhibits attained immediate and lasting attention.

Early in May, Frigidaire announced plans for the construction of an air-conditioned home at the A Century of Progress, so that an estimated 2,000,000 visitors from every part of the land might have an opportunity to feel the year-'round comfort which comes from air conditioning.

Modern in design, but not bizarre, the home was not a house of wonders, which none but the well-to-do could afford and none but the mechanical-minded could operate. Rather, the house was intended to reflect in its surroundings the simplicity most persons desire.

To outstanding features dominated the house: (1) comfort possible under all weather conditions and in all climates by use of home air conditioning; (2) A lifetime kitchen, efficient, attractive, yet low in cost.

Home cooling by mechanical refrigeration was undertaken by research workers at the University of Illinois with sponsorship by the American Society of Heating & Ventilating Engineers and the National Warm Air Heating and Air Conditioning Association. At the latter's spring meeting, much attention was given to results of experiments at the University's seven-room experimental house.

It was explained that a number of methods of reducing the summer cooling load of a house had been devolved—among them the use of attic fans to draw in night air, and the use of awnings to reduce heat entrance from solar radiation.

Considerable attention was also given the problem of insulating homes to prevent loss of heat in winter and its entrance in the warm months.

Storm sash, used in refrigerated rooms in the experimental house, was estimated at saving between 20 and 25 per cent of fuel costs.

Two of the newest trends in residential developments — coordinated architectural treatment and air conditioning — were exemplified in the Hamlet, a suburban community opened in August in Chevy Chase, Md. Eight modern homes, each designed to present a pleasing and harmonizing variety with respect to the others, was the first unit in a number of similar projects planned for the community by the Chevy Chase Land Co.

Within the houses, comfort, cleanliness, and convenience were emphasized. All were equipped with General Electric air-conditioning heating plants, for which G-E oil furnaces served as the basic units. Provision was also made for the installation of summer air conditioning equipment. A number of the homes were provided with full equipment at the outset.

Other electrical conveniences, such as G-E electric refrigerators and ranges, were also provided. In spite of the large number of electrical appliances in use, however, not a wire was in evidence, for all wires, including telephone, were run underground.

Air conditioning was demonstrated to Clevelanders in the House in the Sky, a model home of full dimensions built in the Builders Exchange, one of the major buildings in the Terminal development.

The house, of Normandy design as far as the exterior was concerned, was of modern motif within. A model kitchen and complete air conditioning were two of its features, with the latter feature being taken care of by central duct systems, unit conditioners, and self-contained units — an installation made to show visitors the various ways in which air conditioning might be adapted to residences.

The House in the Sky had been a drawing card to residents and out-of-towners for four years, but only last year was air conditioning installed. Especially during the hot summer days, visitors were more numerous than usual, and used every pretext to prolong their stay. It was estimated 30,000 persons visited the exhibit in the first 30 days after air conditioning was installed.

Biggest value of the exhibit, its sponsors, thought, was showing the public air conditioning was something practical, not mysterious and hard to understand.

## Westinghouse

The Westinghouse "Home of Tomorrow" at Mansfield, Ohio, was filled with novel electrical devices, many of which were, frankly, experimental. These included concealed lighting, automatically-opening doors, panel heaters embedded in walls, and a new system of home air conditioning.

Selective cooling was provided, refrigerating equipment having a capacity of only 24,000 b.t.u. per hour, whereas the usual requirements were estimated at 53,000 b.t.u. per hour. The cooling system was designed so that the cooling effect could be transferred from the living room and dining room to the bedrooms, to furnish complete cooling for either of these two groups of rooms.

Attractiveness of this system lay in its lower cost, about one-half being saved on both the cost of the equipment and the installation. Operating expense was also considerably reduced.

The duct system was divided into three sections, one accommodating the dining room and living room, the second, three bedrooms, and the third, the rest of the house. Return ducts were taken from all rooms which it was desired to cool separately. The three supply and return duct sections come together in the weather room so that all of the air passed through the air-conditioning unit.

Six electrically operated dampers were used to open and close the three supply and three return ducts as required.

Two thermostats, one in a bedroom and another in the living room, provided automatic temperature control. On a 90° F. day, it was possible to maintain a temperature of 76° F. in the living room, dining room, or bedrooms by concentrating the cooling on that section, or to maintain a temperature of 78° F. in the living room and dining room, and 80° F. in the bedrooms when the system is used throughout the house.

"America's Little House," built in New York City by "Better Homes in America," an educational, non-profit organization which has been instrumental in the building of some 15,000 exhibit homes in the country during the past 11 years, was designed to give the typical American family the advantage of expert planning and purchasing for every product used.

Every item displayed in the home was selected by a committee after rigid tests, and was bought in the open market, at current retail prices. As far as possible, nationally distributed, branded, products were used. Each one had an actual point-of-use demonstration under ideal consumer conditions.

Planned for the average family of five, without maid, the house was equipped with many of the newest devices for labor saving and comfort. On the committee in charge of the project were Mrs. William Brown Meloney, one of the founders of the National Better Homes movement; Mrs. Robert G. Mead, known for her interest in philanthropical educational work; Dr. Lilian Gilbreth of the American Society of Mechanical Engineers, an authority on motion-saving study; Dr. Mary Swartz Rose, professor of nutrition at Columbia University and an authority on dietetics; Mrs. Emily Post, authority on etiquette; and Dr. S. J. Crumbine, general director of the American Child Health Association.

"Aunt Susan's Electrical Home," sponsored by the Daily Oklahoman and the Oklahoma Gas & Electric Co., and located in Oklahoma City, was probably the first city in the Southwest to have automatic year around air conditioning.

The system was designed to maintain 81° F. dry bulb and 50 per cent relative humidity inside, when the outside temperature is 96° F. with 39.6 per cent relative humidity. This provided an effective temperature of 74° F. inside.

Apparatus consisted of a central fan system located in the equipment room in the basement. Both fresh and recirculated air are used, being drawn through spun glass filters to remove the dust and dirt. In summer, the air is passed through direct-expansion finned-tube type cooling coils where it is cooled and dehumidified. In winter, the cooling coils are by-passed and the air passed directly into a gas-fired warm air furnace and through a spray-type humidifier.

Most important feature of the control system is the automatic change-over switch which permits the change-over from the heating to the ventilating to the cooling cycle of operation and back again in the reverse order without attention. Fall and spring weather changes, in which heat is often needed in the morning and night and cooling throughout the day, make this feature a valuable addition to the system.

In November, Kelvinator announced it would build a model home near its factory in Detroit, to demonstrate year-'round air conditioning as a practical achievement. Ground for the new project was broken shortly before the close of the year.

* * *

## Kelvinator, York

In design, construction, and equipment, the Kelvinator home is expected to resemble the average residence of its type in this country, although window designs may depart somewhat from the traditional. One of the main purposes of the house, officials said, is to demonstrate that a single model or set of equipment is not equally efficient, economical, and satisfactory in any part of the country.

They hope to duplicate, in the new home, air-conditioning results needed anywhere in the United States.

One of the features of the home will be its completely electrified kitchen. Another will be its lighting effects.

York's model home at York, Pa., a residence within the medium price range exhibited to show the home-lover what science has made available in convenience and comfort, was so attractive that the first person to whom its features were shown promptly purchased it, on the first day it was opened for inspection.

Control instruments which governed the operation of the system, consisting of a clock-thermostat, two humidifiers, and a manual control panel, were located in a wall at the foot of the stairway leading upward from the main hall.

By means of this control panel, the owner can control the proportion of fresh air taken into the house; he can condition either the first or second floors, or both floors; he can turn on or off at will an air purifier which ionizes the air; he can continue the operation of the system as late as may be desired into the night; or he can leave the night operation of the system entirely to the clock-thermostat control.

A duplicate control panel is located on the second floor.

By a touch of the switch, it may be changed over from a summer cooling system to an adequate and smoothly functioning heating plant for winter use.

Under winter operation, the relative humidity is automatically adjusted to the most comfortable level, while in summer operation the humidity is automatically lowered so that conditions of greatest personal comfort are maintained throughout the year.

"Brides House," operated by the *House Beautiful* magazine, was closed during part of the year, to be reopened some time during this spring. It consisted of drawing room, dining room, library, and two bedrooms. The kitchen, which will be a feature of the reopened house, will be completely electrically equipped by General Electric with refrigerator, range, and electric dishwasher.

The Federal Housing Administration planned a Modern Home Exhibit for the week of Feb. 16 at the Chicago Coliseum, to encourage home owners and prospective home-owners in the use of home furnishings and products allied with the building industry.

## 'That Dar-ring Young Man on the Fly-ying Tra-peeze---Oh-h-h-h-h!!!'

Even though the four weeks of General Electric's air-conditioning institute for sales engineers were crammed with lectures and study, the universal urge for singing was encouraged at meal-time. The editor's candid camera caught these glimpses of barber-shop harmony in the making. Other pictures of the Schenectady institute in action may be found on pages 1 and 16 of this issue.

## Signed Testimonial Given Mrs. Johnston By Universal Cooler

DETROIT — A testimonial to the memory of the late G. M. Johnston was presented his widow, Gladys Beryl Johnston, last Sunday by M. A. Blodgett, employment manager and director of personnel, Universal Cooler Corp., representing more than 500 Universal Cooler employees.

The testimonial took the form of a morocco-bound book of 36 pages containing the signatures of 541 employees. In golden letters on the cover were blocked in the words:

"IN MEMORIAM"
Geoffrey Maurice Johnston
1885 . . . 1935

On the first page after the fly-leaf appeared a memorial address written by Gordon Muir, Universal Cooler's advertising director, and printed in old English script. The next leaf contained the latest photograph of the former Universal Cooler president. The remainder of the book was filled with the signatures of the employees.

Text of the memorial address is as follows:

"Mrs. Gladys Beryl Johnston:

"We employees of Universal Cooler Corporation whose signatures appear on these pages, desire to express to you and your family, our heartfelt sympathy in your bereavement.

"Although the endearing qualities of your husband were best known to you, yet we too, recognize them, and deem it a privilege to share your sorrow and bow our heads in homage to the memory of an inspiring leader and a true gentleman.

"Notwithstanding the almost incessant demands on his time, he was ever ready to listen patiently to even the least responsible among us with sympathy and an understanding heart. His graciousness, poise and friendly counsel never wavered, and we wish you to know that the esteem in which he was held by us as a man who essentially human, will always remain a golden tribute to his memory.

"Removed from his activities in the full glory of his splendid manhood, there is still some measure of consolation in remembering that he left us in the bright light of unshadowed accomplishment, possessing our love, loyalty and admiration."

## Grunow Executives at Peirce-Phelps Meeting

PHILADELPHIA — Peirce-Phelps Co., Grunow distributor, was host to dealers, salesmen, and service men of the Philadelphia territory at the Broadwood hotel here Feb. 12, for the introduction of the 1935 line of Grunow refrigerators and radios.

Sales and merchandising plans for the year were outlined, speakers including William C. Grunow, president of the General Household Utilities Co.; H. C. Bonfig, vice president in charge of sales; J. J. Davin, sales promotion manager; Dr. J. D. Jordan, laboratory director; and Lt. Com. F. H. Schnell, short wave radio engineer.

## *Dealers Travel Long Way To Texas Meeting*

EL PASO, Tex.—Distances of 1,180, 1,100, and 1,080 miles were traveled by three of the 35 dealers attending the spring sales meeting of E. O. Cone Co., General Electric distributor for El Paso and surrounding territory.

Roe Green, Wheeler, Tex., traveled 1,180 miles to and from the meeting; P. A. Spidy, Borger, Tex., 1,100 miles; R. Ballew, Memphis, Tex., 1,080 miles.

Other dealers present were: L. N. Riter and W. R. King, Spur, Tex.; C. C. Alsup and J. R. Hull, Clovis, N. M.; W. H. Spauling, Portales, N. M.; L. R. Woodhead and L. F. Woodhead, Roswell, N. M.; J. R. Coppage, Artesia, N. M.; F. D. Long, Socorro, N. M.; G. H. Hirschfeld, Hot Springs, N. M.

R. A. Garrett, Floydada, Tex.; Burt Newlin, Canyon, Tex.; W. N. Durham, George Pidcoke, L. Dye, L. Finklea, Mrs. Finklea, and W. H. Adams, Amarillo, Tex.; G. Appel, Canyon, Tex.; E. B. Black and W. J. Stanford, Hereford, Tex.

S. H. Carter, Slaton, Tex.; B. Sherrod, Mrs. Sherrod, P. Sherrod, E. T. Wood, and Mrs. Wood, Lubbock, Tex.; J. Hinson, Brownfield, Tex.; E. Lancaster, Sweetwater, Tex.; L. Zeihm, Big Spring, Tex.; Ben Fields, Deming, N. M.; and Mr. Porterfield, Silver City, N. M.

## *Anchor Lite Dealers See New Crosley Line*

PITTSBURGH — Presentation of the 1935 line of Crosley refrigerators was made at a dealer meeting held here recently by the Anchor Lite Appliance Co., wholesale Crosley distributor in the Pittsburgh territory.

Harold W. Goldstein, president of the distributing firm, returned from Miami Beach, Fla., to attend the meeting.

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# Coin Meters Again

YOUNG is the 1935 electric refrigeration selling season, yet there are already signs that one of the most troublesome and hard-to-settle arguments that refrigeration sales organizations ever get embroiled in is upon the industry again. The coin-meter plan of selling over which some of the refrigeration industry's bitterest disputes have been waged, is once more in the forefront of discussions among dealers and distributors.

This year, it seems, both Frigidaire and Kelvinator (also Leonard) are actively pushing the coin-meter plan. Distributors' field men representing these lines are dangling the meter plan as bait in front of the eyes of prospective dealers, according to reports from the field, and are finding it a very successful lure. Distributors for other lines are, in some sections, seriously concerned by the jump on competition Frigidaire and Kelvinator have been getting through successful promotion of this plan.

## 'Take It or Leave It'

General Electric executives frankly say that they can come to no definite conclusion, one way or the other, about the plan. You can take it or leave it, almost as you choose, if you are a General Electric dealer. The same situation holds true in Westinghouse ranks.

Ralph Cameron, assistant sales manager of the General Electric refrigeration department, declares that reports from dealers about their luck with coin-meter selling are violently conflicting and, when put together and studied, don't seem to make sense.

"Either a dealer (generally a department store) has had remarkable success with coin-meter selling, or else it has proved to be a miserable failure," he observes. "There just doesn't seem to be any middle ground in the matter. Apparently it all depends upon the individual dealer and the locality."

## Background of the Idea

Although it was not commonly known at the time, General Electric manufactured the first coin meters for the Meter-Ice Co. Later Frigidaire bought Meter-Ice, and began actively pushing the scheme. Kelvinator and Leonard promoted the idea with considerable good fortune last year. Other manufacturers would have little to do with it, although most of them did not hinder dealers from employing the plan if they so desired.

In general, the large financing concerns, like C. I. T. Corp. and Commercial Credit Co., look upon coin-meter selling with disfavor. Frigidaire has its own financing concern (General Motors Acceptance Corp.), as do Kelvinator and Leonard (ReDisCo). Department stores are generally able to handle the paper themselves.

It is in the latter establishments that the meter plan of selling has been used the most extensively, and with the best results. Most department store selling is floor selling, anyway, and most department store refrigeration presentations are inadequate. So the coin-meter plan, which peculiarly seems to sell itself to certain types of prospects, has proved to be a genuine boon with many of the nation's leading mercantile establishments. It should be noted, however, that in those stores where the meter plan has been followed successfully for two or more years, an actively functioning credit department has invariably applied brakes at the proper moments. Nobody is allowed to take a refrigerator home on the quarter-a-day or 15-cents-a-day plan unless the credit department feels absolutely sure that that machine is likely to stay put.

## Salesmen Think It's a 'Sissy' Idea

Genuine specialty selling organizations have been inclined to scoff at coin-meter merchandising as being a makeshift substitute for real salesmanship. The honest-to-John specialty selling organization executive, one who started on his carrer by leaning on doorbells, thinks of coin-meter selling as a "sissy" scheme. Proponent "Hike" Newell, Frigidaire's vice president in charge of sales, is one of the few exceptions to this rather general rule. Mr. Newell, who worked up from the ranks in the New England sales territory, has been extraordinarily active in promoting the idea for the last three years or so.

Perhaps this is one case in which the refrigeration industry should solicit the aid of Scotland Yard, or J. Edgar Hoover and his United States Department of Justice sleuths, for almost nothing that has come up in the industry has remained such an unsolved mystery. Other problems come along and, in due course of time, are solved. The solutions are demonstrably correct.

## No Agreement on the Plan

After five years of it, however, refrigeration sales organizations are no closer to an agreement on the merits of coin-meter selling than they ever were. Evidence is heavy that it is one of the quickest and most reliable methods of selling a large volume of refrigerators yet devised. On the other side the evidence is almost equally heavy that the scheme is almost the ruination of dealers who try it, and gives the whole refrigeration business a setback in the communities in which the plan is put into operation.

You're either "fer it or agin it," depending upon your own experience and, as Ralph Cameron puts it, there seems to be no middle ground. At any rate, manufacturers and distributors may find coin-meter merchandising their No. 1 Problem this season. Some of them already have.

# WHAT OTHERS SAY

## With Apologies to Aesop

ONCE upon a time, a man who was journeying through the jungle had the misfortune to fall into a tiger trap pit.

Being of a reflective turn of mind, his mishap caused him to ponder upon the sins and shortcomings of his past life, of which there were a considerable number. Meanwhile, of course, although his mind was thus occupied, his hands and feet were engaged in trying to climb out of the pit.

This was not an easy thing to do, since such pits are made with the purpose of retaining what falls into them, so in the course of time his mind turned from the reflection upon his past life to a consideration of his future. "When I escape from this pit," he resolved, "I will turn over a new leaf and become a changed man. I will give to the poor, provide for my indigent relatives, be kind to animals, and treat my mother-in-law with respect. I will also improve my property, plant trees and vineyards, and build roads so that my neighbors who are less fortunate may have work and wages."

These thoughts were very intriguing to the man in the pit, and the vision of the benefactor that he was to become and the good that he was going to do not only eased his mind of apprehension, but took it away from his immediate problem of getting himself out of the hole he was in. His physical efforts in behalf of self-preservation therefore became more and more subordinated to the easier and more pleasurable exercise of imagination.

No doubt, after all of this intensive long-range planning for the future, he might indeed have become a great public benefactor, had it not been that a tiger soon fell into the same pit and ate him up.

The moral of this tale, if any, may be that too much long-range planning for the future may not be expedient if it interferes with one's efforts to get out of a hole.—J. H. VANDEVENTER in *The Iron Age*.

# LETTERS

## It's Our Stock in Trade

Wholesale Radio Service Co., Inc.
100 Sixth Ave., New York City
Editor:

In about four weeks we plan to bring out the spring issue of our catalogue. This issue will contain a complete section of refrigerator replacement parts. We are very anxious to prepare a small book on service hints or some similar subject that we might give away free as an inducement for service men to become acquainted with our organization.

We have noted with interest the series that you ran on "orphan" equipment in the issues of ELECTRIC REFRIGERATION NEWS.

If you will let us have your permission to do so, we would like to reprint this series in booklet form and give away either free or with each order for a certain specified sum. We will, of course, give due credit to ELECTRIC REFRIGERATION NEWS, for this material.

In addition to reprinting this information, we would like to run the information you have given in E.R.N. on specifications of the various refrigerators. May we have your permission to reprint this information, providing due credit is given? Also, has any additional information of this type been published in E.R.N. since the issue of Jan. 30, 1935?

H. R. LEVINGER.

*Answer*: We are holding all articles on the servicing of orphan refrigeration machines in type and plan to publish this material in book form in the near future.

We are also collecting final specifications on all models of all makes of electric refrigerators (household and commercial) for publication in a new book of specifications to be issued in a few weeks.

Considering the fact that much time and expense is involved in the collection and editing of this material, all of which is protected by copyright, we cannot very well give it away to others for free distribution.

You may not realize that editorial costs are the largest item of our expense. Personal calls and much correspondence is involved in the collection of specifications. In some instances it has required a great deal of persuasion to gain the cooperation of manufacturers in securing this information. In the case of the specifications book, our principal source of revenue will be the sale of copies. This book will be offered at a nominal price in order to encourage the widest possible use.

## Here's a Customer

Refrigeradio Sales & Service Co.
1022 N. Piedras St., El Paso, Tex.
Editor:

We are in the market for a consignment proposition of show cases, walk-in boxes, etc., such as McCray and others sponsor. Your DIRECTORY fails to mention any firms which merchandise with this plan, and a few inquiries have failed to flush any.

REFRIGERADIO SALES AND SERVICE CO.

## They Can't Keep 'Em

Northern Electric Co., Ltd.
General Sales Dept.
1261 Shearer St., Montreal, Que., Can.
Editor:

Can you conveniently locate for me a copy of the NEWS for Oct. 17 last.

Although two copies of the NEWS are received regularly by this department for the last couple of years, so many of our people are interested in reading it that we have a difficult time in trying to keep one complete file, this number in particular happens to be missing.

M. MOUSSETTE,
Merchandising Sales Dept.

## Sales, Production Figures

E. I. du Pont de Nemours & Co.
R. & H. Chemicals Dept.
Wilmington, Del.
Editor:

On page 12 of your Jan. 2 issue a number of charts appear illustrating sales of household refrigerators.

If possible, we should like to obtain actual monthly sales of household units for the years 1932, 1933, and 1934. We presume that "sales" means sales to dealers and distributors, including exports.

Is it possible for us to obtain figures on the production of household units for the periods mentioned above? If so, we should appreciate your advising us how and from whom we might obtain the figures.

J. H. HILDRETH.

*Answer*: Monthly sales of household electric refrigerators from January, 1930, through December, 1933, were published on page 470 of the 1934 REFRIGERATION DIRECTORY AND MARKET DATA BOOK. These figures are estimates of sales by industry manufacturers to their distributors and dealers, including exports.

These figures on monthly sales will be brought up to date in the 1935 REFRIGERATION MARKET DATA BOOK.

On page 13 is a chart which shows the trend of monthly sales for the past five years.

The Refrigeration Division of the National Electrical Manufacturers Association (Nema) began to compile *production* figures for the first time during 1934, and such a tabulation was shown in the monthly 1934 Nema reports. We have made no attempt to estimate production for all companies.

By referring to issues of ELECTRIC REFRIGERATION NEWS containing the monthly sales figures for Nema members, you can secure monthly production figures for the past year. These issues are as follows:

March 14 (for January figures), April 4 (for February), May 2 (for March), June 6 (for April), July 25 (for May), Aug. 11 (for June), Sept. 12 (for July), Oct. 3 (for August), Nov. 7 (for September), Dec. 5 (for October), Jan. 2 (for November).

## A Cheer for Gen. Farley

Commonwealth Utilities Co.
1341 South Michigan Ave., Chicago
Editor:

Attached please note the renewal card on my NEWS subscription and order for the DIRECTORY AND DATA BOOK.

Having noticed many comments from readers on delivery dates on the NEWS, I think you will be interested in learning that I always receive my copy Thursday afternoon.

H. J. RICHARDSON, JR.

# BOOKS

## 'I Am a Salesman'

Author: Jack Klein. Publishers: Harper & Brothers, New York City and London. Pages: 271. Price: $2.50. Date of publication: 1934.

THIS is not the autobiography of a master salesman, as its title would seem to indicate. It is, rather, a concise volume of facts and methods that every salesman of specialty appliances should assimilate, in one form or another, if he wants to crash the ranks of the big money-makers.

In plain, understandable language, the author records the experiences, emotions, ambitions, hardships, triumphs, and feelings which every salesman has gone through in his trips around the territory assigned to him. The ideas presented are sound and fundamental—each of them has been pavement-tested.

The book starts out with a chapter on "ataraxia," peace of mind and contentment, and then sets out to show salesmen how to achieve it. Prospects are classified as those who "discuss the price of wheat," "coon chasers," "aspirins," "monkeys," "callbacks"—and the men who sell to them as "palookas," "star salesmen," "salesmen," "soliloquy," "pidgin english," and "stentorians."

Throughout the volume runs the credo of success in this, as in any other field; work—hard, unremitting work, without regard for clock or comfort.

Prospects are carefully analyzed as to type, and methods of approach are carefully considered. And that old bugaboo of most specialty men, the "cold turkey," or straight canvass, is shown by experience and the statistics of one successful salesman to be more productive and profitable, call for call, than any of the others.

The author is a firm advocate of the standard sales talk—the "canned sales talk," he calls it—as a money-maker, time-saver, morale-builder for salesmen.

"Wouldn't you rather listen to one good sales talk, one good "canned talk," delivered over and over and over again than 10 attempts to say the same things in different ways?" he asks.

"Camouflage," he calls the attitude adopted by prospects to hinder the salesman's closing the order. The tight-lipped, poker-face kind, the cordial, jovial, over-friendly type, the prospect who busies himself with other things, pretending to ignore the salesman—Mr. Kline has met them all, and tells the best methods of dealing with them.

The book is sprinkled with enough examples and anecdotes to keep the reader's interest from lagging, and all the writing is in straightforward, intimate fashion. Boiled down, the volume is little more than a summary of the things all salesmen have been taught to do—fundamentals which all salesmen think they know by heart, but which are all too often forgotten or neglected.

"I Am a Salesman" will do much to refresh their memory.

As the author writes:

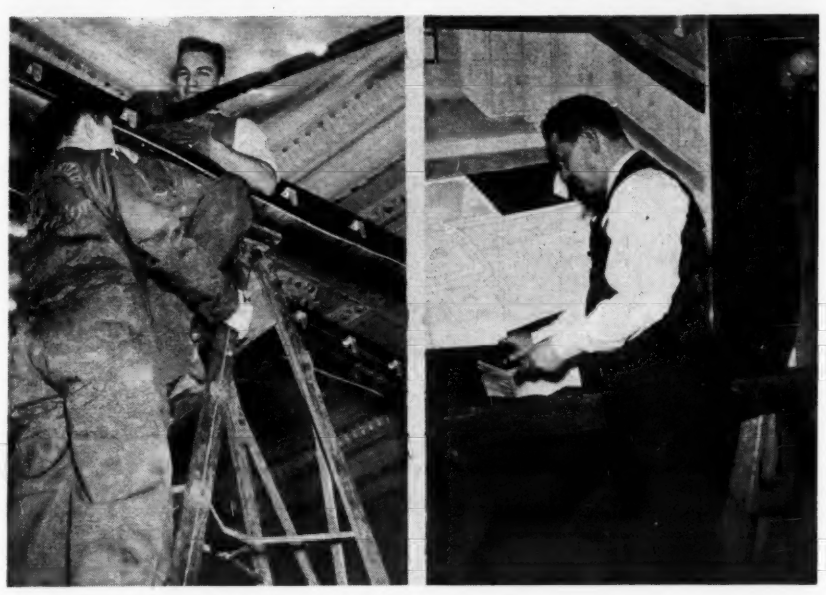
"There are only three sure things in life:

"1. Death.

"2. Taxes.

"3. The fact that salesmen must walk and talk to get orders!"

## They Learn to Be Scenery Shifters



The men working from the stepladder are R. E. Brogan and R. W. Watts of General Electric's sales promotion division, who risk their necks daily in putting up scenery for distributors' shows. At the right, G-E's Central States District Manager Fred Harvey tackles a backdrop.

## Refrigerator 'Household Necessity,' Judge Says

LOUISVILLE — Manufacturers of electric refrigerators who advertise their products as a "household necessity" had the phrase given legal status recently when Judge Nat C. Cureton, referee in bankruptcy, handed down a ruling holding the electric refrigerator to be a household necessity.

The opinion, given in the case of John Cornell, who was adjudged a bankrupt in July, 1933, with liabilities of $1,243.86 and no assets, held that Cornell was within his rights in claiming his electric refrigerator to be a legal exemption for his household effects.

Judge Cureton, in declaring the refrigerator to be a necessary part of a man's household furnishings, said that he believed the law should be construed liberally in favor of a debtor.

He cited the fact that 75 years ago legal exemptions included "a teapot, Bible, a dozen knives, forks, and spoons, and a hymnal book," but that these items were omitted when the present statute was passed in 1886.

It was the judge's opinion that since there was no mention of an electric refrigerator in the present law, and no ruling from a higher court concerning them, he would be forced to put his own interpretation on its necessity as a portion of household furnishings.

## Crosley Sales Gain 360% Over January, 1934

CINCINNATI — Sales of Crosley Shelvador electric refrigerators for January were 360 per cent greater than those for January, 1934, according to Vice President Lewis M. Crosley of the Crosley Radio Corp.

"The season has started six weeks earlier this year," Mr. Crosley said. "Last year it was difficult to get distributors and dealers to take shipments before March 1. This wait-and-see attitude has passed, and we have had to work full force to make shipments on orders placed by distributors."

Improvement has been noted in various sections of the country, even those which suffered most from last summer's drought, Mr. Crosley said.

## 350 Attend Westinghouse Meeting in Buffalo

BUFFALO — Three hundred and fifty dealers attended a meeting and banquet held at the Lafayette hotel here recently by McCarthy Brothers & Ford, distributor for Westinghouse in Buffalo, western New York, and northern Pennsylvania.

Karr Parker, president of McCarthy Brothers & Ford, was in charge of the meeting. The 1935 Westinghouse line was presented by T. J. Newcomb. Speakers included N. L. Myers, W. H. Loeber, J. L. Johnston, and R. H. MacGillivray.

## Appliances Worth $10,000 Sold by Experimental Store

MUSKEGON, Mich. — More than $10,000 worth of General Electric equipment has been sold by the Maxon G-E appliance store since its opening here last summer.

Figures to Jan. 1, show sales of 550 major appliances, including more than $7,000 in small appliances and $3,600 in commercial equipment. Major appliances sold include 94 electric refrigerators, 100 ranges, 70 washing machines, 84 sweepers, 15 ironers, 18 water heaters, three dishwashers, a glasswasher, and 150 radios.

## F-M Prepares Dealer Sales Helps

CHICAGO—Fairbanks-Morse Home Appliances, Inc., is offering its dealers a number of sales-helps designed to tie up with the company's national advertising campaign on the 1935 Conservador electric refrigerator.

One of these is an "open the door" campaign of six booklets, available for dealers and salesmen. The booklets cover the exclusive Fairbanks-Morse features, and are intended to furnish salesmen with ample selling talk material.

The first booklet deals with the company's 104 years of experience in merchandising, its financial background, and general features of the F-M refrigerator. In the second, the F-M line's styling, finish, and mechanical and convenience features are treated more in detail.

Third booklet explains "duo-pressure" as it is found in the 1935 Conservador line, while the fourth goes into the construction of the unit, outlining what that construction means in current consumption, convenience, and food preservation.

Advertising procedure is dealt with in book five, as well as the manner of following prospects by mail, securing trade-ins, and the demonstration of the Conservador. Last booklet in the series is a general resume, plus information on prospect-finding, canvassing for radio and refrigeration sales, and the use of the F-M washer and ironer as entering wedges into the prospect's home.

Customer-getting gifts available to dealers include "Can You Tell Me?", a booklet containing questions and answers, world radio log, household hints, and other everyday information; Scurlock Kontainerettes, which may be offered as premiums with refrigerators; and a globe atlas in two sizes, intended for use as a premium with radio sales.

## Bullock Made Assistant G-E Publicity Manager

SCHENECTADY—B. W. Bullock has been appointed assistant manager of the General Electric publicity department, and assistant manager of broadcasting for G-E.

Since 1933, Mr. Bullock has been assistant to Chester H. Lang, manager of the G-E publicity department. He entered the business training course of the General Electric Co. in 1922, working in the accounting department.

In 1923, he was transferred to the publicity department, where he worked in market analysis, institutional advertising, and central station advertising. At one time he was in charge of the distribution section of the publicity department.

## Utilities Recommendations Cited in Electrolux Copy

NEW YORK CITY — Electrolux advertisements, timed to run in national magazines in the early spring, stress recommendations of gas companies in the copy.

In one advertisement, picturing two women in conversation, one remarks " . . . and the refrigerator my gas company recommended was the best looking of them all." In another, a wife tells her husband she is glad they took their gas company's advice. "The gas company was right," and "Just as my gas company said . . . " are other phrases used.

Advertisements in full color will be run in the *Saturday Evening Post*.

Other magazines to be used include the *American, Better Homes & Gardens, Collier's, Cosmopolitan, Good Housekeeping, Liberty,* and *Time*.

# SERVICE

## How to Service Iroquois Units; 1—Construction & Operation

IROQUOIS household electric refrigerators were manufactured in 1927, 1928, and 1929 by the Barber Asphalt Co. at its works in Buffalo, and were merchandised through the Iroquois Electric Refrigeration Co., a sales subsidiary. The refrigeration business was liquidated during 1929.

In the words of the manufacturer of the Iroquois unit, "ethyl chloride (the refrigerant used) was not selected for the Iroquois, but quite the contrary, the Iroquois was designed for the use of ethyl chloride."

Thus, this first instalment on the servicing of Iroquois machines will deal with the characteristics of ethyl chloride and correct methods of handling it, as well as the design of the Iroquois system. The second article to be published next week, will discuss recommended service and installation methods.

The NEWS is indebted to Alfred K. Anderson of West Orange, N. J., for the information presented herewith.

### Ethyl Chloride

While at first ethyl chloride was prepared almost entirely for medical purposes, the technical application has become extensive. The chief uses of ethyl chloride are for ethylation in the manufacture of dyestuffs, for refrigeration, and as a solvent.

### Operates Under Low Head Pressures

The following tabulation shows in lbs. per sq. in. (gauge) the pressure exerted by ethyl chloride in containers at the indicated temperature:

| Temperature (°F.) | Pressure |
|---|---|
| — 22 | —12.5 |
| — 4 | —11.04 |
| 14 | — 8.85 |
| 32 | — 5.71 |
| 50 | — 1.33 |
| 68 | 4.59 |
| 77 | 8.24 |
| 86 | 12.40 |
| 95 | 17.12 |
| 104 | 22.47 |
| 122 | 35.17 |
| 140 | 51.04 |
| 158 | 70.46 |
| 176 | 93.8 |
| 194 | 121.6 |
| 212 | 153.5 |

Pressure in ethyl chloride containers, under ordinary shipping conditions, even during hot weather, will rarely exceed 12.5 lbs.

### Physical Properties

Ethyl chloride is adaptable to domestic refrigeration because of its physical properties as shown below:

1. Color—Colorless transparent liquid.
2. Odor—Etherial.
3. Chemical symbol—$C_2H_5Cl$.
4. Molecular weight—64.5.
5. Critical temperature °C.—182.8.
6. Critical temperature °F.—361.0.
7. Critical press. lbs. sq. in. ab.—784.
8. Boiling point °C.—12.5°.
   Boiling point °F.—54.5°.
9. Melting point °C.—138.7°.
   Melting point °F.—217.7°.
10. Density of liquid at 0° C.—.9214.

Readily soluble in alcohol, chloroform, etc., 100 vols. water dissolves 10 vols. of ethyl chloride gas at ordinary temperature and pressure.

While it is true ethyl chloride is inflammable, its latent heat vaporization, combined with the fact that the mixture of ethyl chloride and air is only inflammable over a comparatively narrow range, renders it no more dangerous to handle than alcohol or benzol.

The Pittsburgh Experiment Station of The United States Bureau of Mines gives some comparative data on the limits of inflammability of ethyl chloride and ammonia. In the case of ethyl chloride the limits of inflammability are: lower limit 4 per cent, upper limit 14.8 per cent by volume with air. In the case of ammonia the limits of inflammability are given as lower limits 16.1 per cent and upper limits 26.4 per cent by volume with air.

Ethyl chloride, unlike other chlorinated solvents, is entirely without poisonous properties. The application of ethyl chloride as an anesthetic has, however, given rise to the impression that soporific effects are liable to be produced in workmen handling it, but this is a mistaken impression.

### Handling Ethyl Chloride

The handling and shipping of ethyl chloride are governed by regulations issued by the Bureau of Explosives and by the Interstate Commerce Commission, and it is very important that all service men handling ethyl chloride thoroughly understand these regulations. They are as follows:

Cylinders or drums containing ethyl chloride must be kept away from excessive heat, such as radiators, steam pipes, direct rays of the sun, etc. In case of transporting cylinders by automobile, do not place them on the floor board directly over the exhaust pipes.

Cylinders for shipment must have a valve protecting cap screwed on.

Containers for ethyl chloride must not be entirely filled. Sufficient interior space must be left vacant to prevent leakage or distortion of containers due to the expansion of the contents from increase of temperature during transit. This space or outage as required for ethyl chloride must not be less than 7½ per cent at 70° F. Outage must be calculated to the total capacity of the container.

Ethyl chloride may be shipped by freight in 200 pound quantities, in metal barrels, or drums of a nominal capacity of not over 30 gallons, complying with I.C.C. specifications No. 5A.

Ethyl chloride may be shipped by express in any quantities, in cylinders complying with the specincations for any compressed gas.

Ethyl chloride cylinders should be labeled at all times with an inflammable liquid sticker or card. The RED card and label are for inflammable gases. Express and freight offices will always furnish information regarding the shipment of ethyl chloride to any shipper on request.

Cylinders containing ethyl chloride when transported by service men on trains or boats must not in any case be carried by the service man, but must always be handled as express and shipped in the regular way. They should be properly marked and should not be packed in traveling bags, suit cases, or trunks.

Service men must not in any case carry ethyl chloride in any kind of a cylinder or container on a street car or other public conveyance.

### Must Keep Out Moisture

Valves on cylinders should always be closed when empty. This is very essential as it prevents the possibility of moisture entering.

Cylinders which may have been in a fire must not be filled with ethyl chloride until they have been re-annealed, retested and reported to the Bureau of Explosives.

Service men shipping ethyl chloride in any containers other than those specified above, or those not complying with the Bureau of Explosives or Interstate Commerce Commission regulations, or handling contrary to the above instructions, will do so at their own risk and responsibility.

### Precaution Against Open Flames

Ethyl chloride as used in the Iroquois machine is not dangerous provided proper care and protection are taken in handling. If the following precaustions are not fully observed, accidents may occur.

Positively no smoking should be allowed when installing or servicing machines and also when handling refrigerant or drums of refrigerant in any way.

No open flames of any kind should be allowed to burn when opening drums of ethyl chloride, or when it is allowed to escape for any reason in a basement or any part of a building.

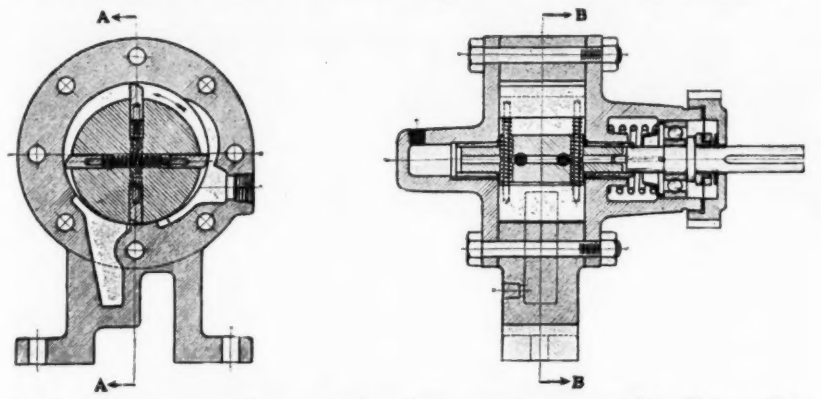
## Service Data on Other Refrigerators

This article is one of a series published by Electric Refrigeration News to give the service man help in servicing various makes of machines. Most of the makes described to date have been "orphan" machines on which service information is no longer readily available.

Service instructions on the following makes were published in these issues:

| | |
|---|---|
| Absopure household | March 25, 1931 |
| Majestic hermetic | Aug. 16, 1933 |
| Allison | May 30 & June 6, 1934 |
| Welsbach | June 13, 20 & 27, 1934 |
| Rice household | July 4, 1934 |
| Wayne household | July 11, 1934 |
| Absopure com'l | July 18, 25 & Aug. 1, '34 |
| Iceberg | Aug. 8, 1934 |
| U. S. Hermetic | Aug. 15, 1934 |
| Belding-Hall ElectrICE | Aug. 22 & 29, 1934 |
| Majestic standard | Sept. 12, 19 & 26, '34 |
| Holmes household | Oct. 10, 17 & 24, 1934 |

## Construction of Iroquois Compressor




At the left, cross-section, end elevation, compressor models C-1 or C-2. On the right, cross-section, side elevation, C-1 or C-2.

## Construction & Operation

The Iroquois refrigerating machine embodies two important units — the compressor-condenser unit and a cooling unit or boiler. The cooling unit contains at all times a definite amount of ethyl chloride. It is in this part of the system that the liquid vaporizes forming a heat laden gas which is drawn off and discharged into the condenser. Here it is converted into a liquid.

As the level of the liquid refrigerant in the cooling unit or boiler is lowered, due to vaporization, it is automatically replenished through a float valve from the accumulated liquid refrigerant in the condenser. This completes one cycle of operation.

### Rotary Compressor

The compressor on the Iroquois is of the rotor type. The rotor is perfectly balanced and rotates on its own bearings independent in its lateral movement of the drive shaft. The drive shaft and sealing device act independently of the rotor, laterally, but rotate the rotor through a tongue and groove coupler.

There is not what is commonly known as a stuffing box to prevent leakage to the atmosphere around the drive shaft. This is accomplished by the use of a sealing device, consisting of two perfect running hardened and ground metal faces, maintained in contact, under spring tension.

The compressor is equipped with four blades.

### Condenser

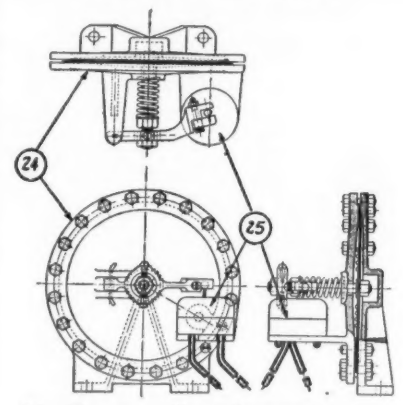
The Iroquois condenser is designed to provide efficient heat transfer. As the heat is transferred from the gas to the air the condensed liquid flows to the bottom of the condenser. The condenser is cooled by forced draft from the fan blades which are a part of the compressor and motor pulleys.

### Automatic Pressure Controlled Switch

The electric switch member, known as a toggle snap switch, is of an approved type suitable for many and various applications. The actuation of this switch as applied to the Iroquois is accomplished by the use of a metallic diaphragm opposed by a spring arranged for adjusting of its tension and all parts assembled into an independent working unit.

This unit is mounted on the base plate of the compressor-condenser unit, and a gas line or tube is connected to the diaphragm chamber and to the suction or vacuum side of the compressor. The spring is set to resist the power exerted by vacuum on the diaphragm to a predetermined point when it will respond and through its movement open the switch, thus causing the compressor unit to stop.

## Pressure Control




24—Cross-section of pressure controlled switch. 25—Switch only.

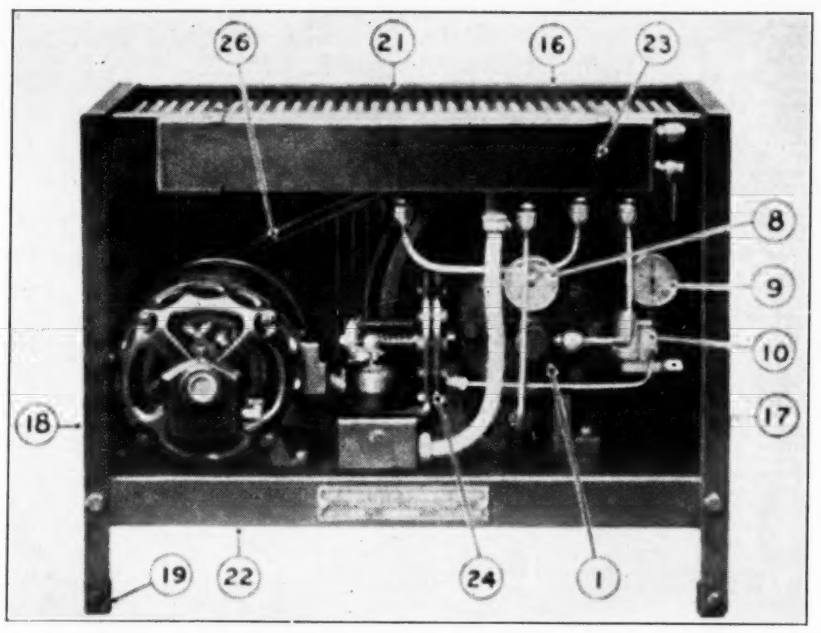
Since the power exerted on the diaphragm is taken from the vacuum side of the system, and, because the refrigerant at a definite pressure has a definite temperature, it is possible to adjust the spring tension on the switch control unit to a predetermined point, where it will act in response to the desired temperature.

The compressor in action, creates a vacuum throughout the low side of the system and in so doing it is creating low temperature in the cooling unit and body to be cooled. At a predetermined point, representing the

(Concluded on Page 11, Column 1)

# SERVICE

## Component Parts of Iroquois Units




1) Compressor C-1 or C-2 complete. 8) Pressure gauge. 9) Compound gauge. 10) Compressor check valve. 16) Condenser complete. 17) Condenser frame, R.H. 18) Condenser frame, L.H. 19) Cushions. 23) Separator complete. 24) Pressure controlled switch complete. 26) Belt.

## Construction, Operation of Iroquois Machine

(*Concluded from Page 10, Column 5*)

desired temperature, the current is cut off and the compressor ceases to function.

Reverse of this movement occurs when the refrigerant in the cooling unit through its absorption of heat lowers the vacuum exerted on the diaphragm and allows the spring to function; this giving a reverse movement which closes the switch and starts the compressor unit.

### Cooling Unit

The Iroquois cooling unit is made up of a header in which the float valve is placed and a system of tubes or sections designed to bring about the most efficient transfer of heat from the air to the refrigerant.

### Float Valve

The flow of liquid refrigerant into the cooling unit is controlled by the use of a float controlled valve. The valve is actuated by the rise and fall of the liquid refrigerant and maintains the difference of pressure between the high and low sides of the system. The variation of the liquid level is due to the vaporization of the refrigerant and its replenishment.

### Belt Drive

The belt used on Iroquois is of the "V" type. The belt when properly adjusted should sag about three-quarters of an inch when pressed down lightly midway between the pulleys.

### Check Valve

The check valve is connected into the suction line at the compressor, for the purpose of holding the vacuum produced by the compressor. Without this valve the gas vapor from the high pressure side of the system would flow back into the boiler as soon as the compressor stopped. This would destroy the vacuum produced and the compressor would again start, due to the fact that the electric switch is controlled by this vacuum.

| Type | Refrigerant Capacity of Pounds Ethyl Chloride | Cooling Units Cooling Unit | Compressor Unit |
|---|---|---|---|
| B-1 | 8 lbs. | B-1 | C-2 |
| B-2 | 9 lbs. | B-1 | C-1 |
| B-3 | 10 lbs. | B-2 | C-1 |
| B-4 | 5 lbs. | B-3 | C-1 |
| 3-L-10 | 4½ lbs. | B-4 | C-2 |
| | | 3-L-10 | C-2 |

(Next week's issue will cover installation and service instructions on the Iroquois refrigerator.)

## Company Formed in N. Y. To Re-build Refrigerators

NEW YORK CITY — Commercial Electric & Refrigerator Co., Inc., has been formed by M. Kerner and Hyman Lippman to buy, sell, and rebuild motors, generators, and refrigeration equipment. Mr. Kerner was formerly of the American Electric Motor Repair Co., and Mr. Lippman was previously associated with Reliable Refrigerator Co.

## Ansul Chemical Co. Now Celebrating 20th Anniversary

MARINETTE, Wis.—Ansul Chemical Co., a pioneer in the large-scale production of liquefied sulphur dioxide, is this year celebrating its 20th anniversary.

During its two decades of business life, the company, under the direction of President F. G. Hood, has had an active part in the development of sulphur dioxide, its production, and distribution on a nation-wide scale, its use in mechanical refrigeration and other fields.

The chemical, in general commercial and industrial use only in comparatively recent years, has long been known to science, having been prepared as a pure gas by Priestly in 1775 and used as a refrigerant by Raoul Pictet in 1875.

In the Ansul Co.'s early years, chief use of sulphur dioxide was in the textile and bleaching industries and for fruit preservation. This market required only a commercial or technical grade of chemical, in which moisture was not considered an impurity if the amount present was not great enough to cause deterioration of shipping equipment or the customer's apparatus.

Advent of electrical refrigeration, however, in addition to greatly increasing the volume of sulphur dioxide used, also brought home the desirability of perfecting the chemical, chiefly by reducing moisture as far as possible and by keeping cylinders dry and clean to avoid contamination in transit.

Early leaders in the field of refrigeration were Isko (now defunct) and Kelvinator, first two companies to attempt maintenance of a production schedule. A one-time chief chemist for the Isko refrigeration company, H. V. Higley, became associated with Mr. Hood shortly after the World War, when the Ansul Co. turned its major attention to advancement of sulphur dioxide's use as a refrigerant.

With its 60 distribution centers located at strategic points throughout the country, Ansul now ships sulphur dioxide in cylinders holding from 2 to 2,000 lbs., and in tank cars of 40,000 lbs. capacity for commercial use.

The company introduced methyl chloride as a companion chemical in 1934.

Foreign use of sulphur dioxide has been increased materially during the company's life, and its subsidiary, Ansul Chemical Co. of California, gasses many cars of California grapes annually for eastern markets, to eliminate mold growth and improve condition of the fruit.

## Sorb Products Introduces Odor Eliminator

NEW YORK CITY—Sorb Products Co. of this city is introducing a product designed to prevent waste and tainting of foods by eliminating the absorption of odors from strongly flavored foods by those more delicately flavored.

The device is a non-corrosive, metallic, cylindrical grille, 1½ in. long by 1⅞ in. in diameter, and is said to have high absorption properties for odors and fumes, particularly those of strongly flavored foods such as bacon, onions, and fruits.

It has two metal clips by which it may be attached to any part of the shelving of the refrigerator.

## Utilities Engineering Named To Home Study Council

CHICAGO — Utilities Engineering Institute has been accepted for membership in the National Home Study Council, announces A. P. Sorenson, president. Schools are admitted after examination of the training courses offered, of the faculty, and of the standards followed in advertising, selling, and conduct of the training.

# 1,264,221 Household Refrigerators SOLD During 1934 by Member Companies of Nema

Thirteen member companies of the National Electrical Manufacturers Association (Nema) reported their sales for all of 1934, while three companies reported for only part of the year. Companies giving reports for the years were: Crosley Radio Corp., Frigidaire Corp., General Electric Co., Gibson Electric Refrigerator Corp., Kelvinator Corp., Leonard Refrigerator Co., Norge Corp., Servel, Inc., Stewart-Warner Corp., Sunbeam Electric Mfg. Co., Uniflow Mfg. Co., Universal Cooler Corp., and Westinghouse Electric & Mfg. Co. These sales include units manufactured for the following concerns: Major Appliance Corp., Montgomery Ward & Co., Potter Refrigerator Corp., Sears, Roebuck & Co., and Truscon Steel Co. Sales of Grigsby-Grunow are included for January and February; for Trupar Mfg. Co. for the first five months, and Rudolph Wurlitzer Mfg. Co. for the first six months.

| | HOUSEHOLD Lacquer (Exterior) Cabinets with Systems | Domestic Quantity | Domestic Value | Canadian Quantity | Canadian Value | Other Foreign Quantity | Other Foreign Value | World Sales Quantity | World Sales Value |
|---|---|---|---|---|---|---|---|---|---|
| | Under 3.00 cubic feet.. | *14,503 | *$ 750,257 | *406 | *$ 20,377 | *8,926 | *$ 460,665 | *23,835 | *$ 1,231,299 |
| 1. | 3 to 3.99 cubic feet.. | 13,997 | 778,543 | 4 | 304 | 2,581 | 155,420 | 16,582 | 934,267 |
| 2. | 4 to 4.99 cubic feet.. | 336,200 | 21,503,004 | 5,238 | 354,944 | 35,968 | 2,445,790 | 377,406 | 24,303,738 |
| 3. | 5 to 5.99 cubic feet.. | 231,072 | 18,201,159 | 3,152 | 247,372 | 8,941 | 730,380 | 243,165 | 19,178,911 |
| 4. | 6 to 6.99 cubic feet.. | 144,577 | 12,954,869 | 2,309 | 206,661 | 7,323 | 699,167 | 154,209 | 13,860,697 |
| 5. | 7 to 7.99 cubic feet.. | 119,977 | 13,102,506 | 985 | 106,686 | 3,891 | 428,841 | 124,853 | 13,638,033 |
| 6. | 8 to 9.99 cubic feet.. | 17,122 | 2,059,977 | 354 | 41,537 | 1,055 | 125,615 | 18,531 | 2,227,129 |
| 7. | 10 to 12.99 cubic feet.. | 756 | 134,048 | 4 | 795 | 96 | 22,611 | 856 | 157,454 |
| 8. | 13 to 24.00 cubic feet.. | 308 | 64,861 | 2 | 452 | 7 | 1,626 | 317 | 66,939 |
| **9.** | **Total Lacquer** ..... | **878,512** | **69,549,224** | **12,454** | **979,128** | **68,788** | **5,070,115** | **959,754** | **75,598,467** |
| | **Porcelain (Exterior) Cabinets with Systems** | | | | | | | | |
| 10. | Under 4.99 cubic feet.. | 23,443 | 1,895,228 | 22 | 1,828 | 3,287 | 283,960 | 26,752 | 2,181,025 |
| 11. | 5 to 5.99 cubic feet.. | 22,888 | 2,135,419 | 58 | 4,735 | 3,182 | 304,700 | 26,128 | 2,444,854 |
| 12. | 6 to 6.99 cubic feet.. | 62,400 | 7,039,886 | 126 | 14,149 | 3,095 | 349,645 | 65,621 | 7,403,680 |
| 13. | 7 to 7.99 cubic feet.. | 69,117 | 8,764,474 | 131 | 18,217 | 3,176 | 396,888 | 72,424 | 9,179,579 |
| 14. | 8 to 9.99 cubic feet.. | 22,188 | 3,230,515 | 88 | 13,788 | 1,668 | 241,063 | 23,944 | 3,485,366 |
| 15. | 10 to 12.99 cubic feet.. | 6,063 | 1,096,197 | 30 | 5,238 | 827 | 145,338 | 6,920 | 1,246,773 |
| 16. | 13 to 24.00 cubic feet.. | 3,067 | 717,853 | 23 | 5,222 | 647 | 149,340 | 3,737 | 872,415 |
| **17.** | **Total Porcelain** ..... | **209,166** | **24,879,572** | **478** | **63,177** | **15,882** | **1,870,943** | **225,526** | **26,813,692** |
| **18.** | **Total Lines 9 and 17**.... | **1,087,678** | **94,428,796** | **12,932** | **1,042,305** | **84,670** | **6,941,059** | **1,185,280** | **102,412,159** |
| 19. | Separate Systems ..... | 66,155 | 2,889,953 | 10 | 606 | 5,533 | 346,833 | 71,698 | 3,237,392 |
| 20. | Separate Household Low Sides ..... | 4,048 | 72,296 | 446 | 6,957 | 2,749 | 47,913 | 7,243 | 127,166 |
| **21.** | **Total Lines 18, 19, 20**... | **1,157,881** | ..... | **13,388** | ..... | **92,952** | ..... | **1,264,221** | ..... |
| 22. | High Sides, ¼ hp. or Less ..... | 7,287 | 336,756 | 330 | 17,676 | 6,796 | 373,874 | 14,413 | 728,306 |
| 23. | Cabinets—No Systems... | 660 | 53,573 | 4 | 303 | 2,220 | 84,605 | 2,884 | 138,481 |
| **24.** | **Total Household** ..... | ..... | **97,781,374** | ..... | **1,067,847** | ..... | **7,794,283** | ..... | **106,643,504** |
| | **COMMERCIAL** | | | | | | | | |
| 25. | Water Coolers with High Sides ..... | †13,448 | †1,282,117 | 45 | 3,886 | 435 | 44,543 | †13,928 | †1,330,546 |
| 26. | Water Coolers with No High Sides..... | 871 | 46,656 | 8 | 416 | 44 | 2,470 | 923 | 49,542 |
| 27. | Ice Cream Cabinets with High Sides..... | 3,587 | 513,339 | 167 | 18,177 | 1,122 | 147,225 | 4,876 | 678,741 |
| 28. | Ice Cream Cabinets with No High Sides.... | 2,819 | 379,829 | 138 | 14,402 | 240 | 29,658 | 3,197 | 423,889 |
| 29. | Beverage Coolers with High Sides ..... | 11,310 | 851,210 | 38 | 3,052 | 89 | 7,154 | 11,437 | 861,416 |
| 30. | Beverage Coolers with No High Sides..... | 2,057 | 139,756 | 24 | 3,116 | 109 | 5,692 | 2,109 | 148,564 |
| 31. | Room Coolers with High Sides ..... | 1,798 | 395,455 | ..... | ..... | 225 | 50,444 | 2,023 | 445,899 |
| 32. | Room Coolers with No High Sides..... | 2,387 | 416,991 | 8 | 1,212 | 249 | 30,141 | 2,644 | 448,344 |
| | **Extra High Sides** | | | | | | | | |
| 33. | ⅛ to ½ hp. Incl..... | †25,508 | †1,891,769 | 563 | 47,989 | 16,411 | 1,168,921 | †43,483 | †3,108,679 |
| 34. | Above ½ to 1 hp. Incl.. | †13,195 | †1,533,579 | 415 | 51,513 | 4,124 | 518,696 | †17,734 | †2,103,788 |
| 35. | Above 1 to 5 hp. Incl... | †7,512 | †1,330,223 | 139 | 25,756 | 1,315 | 247,882 | †8,966 | †1,603,861 |
| 36. | Above 5 to 10 hp. Incl... | 693 | 342,670 | ..... | ..... | 111 | 54,598 | 804 | 397,268 |
| 37. | Above 10 hp. ..... | 180 | 139,271 | ..... | ..... | ..... | ..... | 180 | 139,271 |
| **38.** | **Total Lines 33, 34, 35 36 and 37** ..... | **†47,088** | ..... | **1,117** | ..... | **21,961** | ..... | **†70,166** | ..... |
| **39.** | **Total Lines 25, 27, 29, 31, and 38** ..... | **†77,231** | ..... | **1,367** | ..... | **23,832** | ..... | **†102,430** | ..... |
| 40. | Extra Commercial Low Sides ..... | 44,574 | 1,498,177 | 1,848 | 58,286 | 11,867 | 382,233 | 58,289 | 1,938,696 |
| 41. | Miscellaneous Cases and Cabinets ..... | 433 | 129,803 | 139 | 11,527 | 80 | 21,483 | 652 | 162,813 |
| **42.** | **Total Commercial** ..... | ..... | **†10,890,845** | ..... | **239,332** | ..... | **2,711,140** | ..... | **†13,841,317** |
| **43.** | **Totals—Household and Commercial** | **†$108,672,219** | ..... | **$1,307,179** | ..... | **$10,505,423** | ..... | **†$120,484,521** | |

*Covers the period from July to December, 1934, inclusive only.
†Due to adjustment figures reported the totals indicated by † do not equal the sum of the monthly reports for 1934.

# 68,934 Household Refrigerators SOLD By 13 Companies in December, 1934

The following 13 member companies of the Refrigeration Division of the National Electrical Manufacturers Association (Nema) reported sales for December, 1934: Crosley Radio Corp., Frigidaire Corp., General Electric Co., Gibson Electric Refrigerator Corp., Kelvinator Corp., Leonard Refrigeration Co., Norge Corp., Servel, Inc., Stewart-Warner Corp., Sunbeam Electric Mfg. Co., Uniflow Mfg. Co., Universal Cooler Corp., and Westinghouse Electric & Mfg. Co. Member companies not reporting included: Apex Elec. & Mfg. Co., Jomoco, Inc., Merchant & Evans Co., and Sparks-Withington Co. The sales of the reporting companies do, however, include units manufactured for the following concerns: Major Appliance Corp., Montgomery Ward & Co., Potter Refrigerator Corp., Sears, Roebuck & Co., and Truscon Steel Co.

| | HOUSEHOLD Lacquer (Exterior) Cabinets with Systems | Domestic Sales Quantity | Domestic Sales Value | Canadian Sales Quantity | Canadian Sales Value | Other Foreign Sales Quantity | Other Foreign Sales Value |
|---|---|---|---|---|---|---|---|
| | Under 3.00 cubic feet.. | 492 | $ 25,307 | 22 | $ 1,118 | 1,509 | $ 75,492 |
| 1. | 3 to 3.99 cubic feet.. | 229 | 15,094 | ..... | ..... | 14 | 810 |
| 2. | 4 to 4.99 cubic feet.. | 17,942 | 1,126,355 | 158 | 9,658 | 2,668 | 162,289 |
| 3. | 5 to 5.99 cubic feet.. | 13,974 | 1,132,372 | 147 | 11,076 | 578 | 51,875 |
| 4. | 6 to 6.99 cubic feet.. | 9,319 | 814,670 | 81 | 7,052 | 283 | 26,108 |
| 5. | 7 to 7.99 cubic feet.. | 6,343 | 701,031 | 30 | 3,369 | 184 | 22,345 |
| 6. | 8 to 9.99 cubic feet.. | 885 | 96,797 | 13 | 1,392 | 96 | 11,126 |
| 7. | 10 to 12.99 cubic feet.. | 24 | 4,826 | 2 | 362 | 11 | 4,519 |
| 8. | 13 to 24.00 cubic feet.. | 10 | 2,571 | ..... | ..... | ..... | ..... |
| **9.** | **Total Lacquer** ..... | **49,218** | **3,919,023** | **453** | **34,027** | **5,343** | **354,564** |
| | **Porcelain (Exterior) Cabinets with Systems** | | | | | | |
| 10. | Under 4.99 cubic feet.. | 951 | 74,925 | 4 | 309 | 227 | 17,730 |
| 11. | 5 to 5.99 cubic feet.. | 2,268 | 214,807 | ..... | ..... | 775 | 73,721 |
| 12. | 6 to 6.99 cubic feet.. | 3,368 | 373,439 | 7 | 908 | 141 | 15,051 |
| 13. | 7 to 7.99 cubic feet.. | 3,386 | 437,992 | 5 | 587 | 118 | 13,553 |
| 14. | 8 to 9.99 cubic feet.. | 1,204 | 180,061 | 7 | 991 | 76 | 12,171 |
| 15. | 10 to 12.99 cubic feet.. | 180 | 32,964 | 3 | 534 | 28 | 5,123 |
| 16. | 13 to 24.00 cubic feet.. | 149 | 36,481 | 3 | 596 | 35 | 9,931 |
| **17.** | **Total Porcelain** ..... | **11,506** | **1,350,669** | **29** | **3,925** | **1,400** | **147,280** |
| **18.** | **Total Lines 9 and 17**.... | **60,724** | **5,269,692** | **482** | **37,952** | **6,743** | **501,844** |
| 19. | Separate Systems ..... | 367 | 29,987 | 2 | 122 | 56 | 2,160 |
| 20. | Separate Household Low Sides ..... | 379 | 5,824 | 18 | 286 | 163 | 2,950 |
| **21.** | **Total Lines 18, 19, 20**... | **61,470** | ..... | **502** | ..... | **6,962** | ..... |
| 22. | High Sides, ¼ hp. or Less ..... | 249 | 13,241 | 6 | 358 | 618 | 30,637 |
| 23. | Cabinets—No Systems... | ..... | 179 | ..... | ..... | 410 | 15,708 |
| **24.** | **Total Household** ..... | ..... | **5,318,923** | ..... | **38,718** | ..... | **553,299** |
| | **COMMERCIAL** | | | | | | |
| 25. | Water Coolers with High Sides ..... | 239 | 17,536 | ..... | ..... | 39 | 4,152 |
| 26. | Water Coolers with No High Sides..... | 38 | 2,149 | ..... | ..... | 3 | 148 |
| 27. | Ice Cream Cabinets with High Sides..... | 106 | 14,227 | ..... | ..... | 27 | 3,620 |
| 28. | Ice Cream Cabinets with No High Sides.... | 37 | 4,921 | ..... | ..... | 3 | 372 |
| 29. | Beverage Coolers with High Sides ..... | 311 | 20,278 | ..... | ..... | 17 | 1,097 |
| 30. | Beverage Coolers with No High Sides..... | 102 | 7,136 | 5 | 557 | 9 | 532 |
| 31. | Room Coolers with High Sides ..... | 7 | 1,643 | ..... | ..... | 4 | 788 |
| 32. | Room Coolers with No High Sides..... | 447 | 166,296 | ..... | ..... | 5 | 599 |
| | **Extra High Sides** | | | | | | |
| 33. | ⅛ to ½ hp. Incl..... | 907 | 64,450 | 30 | 2,856 | 2,146 | 144,097 |
| 34. | Above ½ to 1 hp. Incl.. | 461 | 55,489 | 13 | 1,759 | 218 | 28,506 |
| 35. | Above 1 to 5 hp. Incl... | 246 | 47,523 | ..... | ..... | 91 | 17,389 |
| 36. | Above 5 to 10 hp. Incl... | 15 | 8,246 | ..... | ..... | 4 | 2,088 |
| 37. | Above 10 hp. ..... | 13 | 9,505 | ..... | ..... | ..... | ..... |
| **38.** | **Total Lines 33, 34, 35 36 and 37** ..... | **1,642** | ..... | **43** | ..... | **2,459** | ..... |
| **39.** | **Total Lines 25, 27, 29, 31, and 38** ..... | **2,305** | ..... | **43** | ..... | **2,546** | ..... |
| 40. | Extra Commercial Low Sides ..... | 1,745 | 54,466 | 61 | 2,170 | 615 | 20,066 |
| 41. | Miscellaneous Cases and Cabinets ..... | 26 | 5,953 | 5 | 275 | 5 | 1,364 |
| **42.** | **Total Commercial** ..... | ..... | **479,818** | ..... | **7,617** | ..... | **224,818** |
| **43.** | **Totals—Household & Commercial** | **$5,798,741** | ..... | **$ 46,335** | ..... | **$778,117** | |

# Illinois Leads State Sales for December

(Tabulated below are sales to distributors and dealers by states, made by companies listed at right above.)

| States and Territories | Quantity of Household Low Sides |
|---|---|
| Alabama | 347 |
| Arizona | 321 |
| Arkansas | 450 |
| California | 3,639 |
| Colorado | 265 |
| Connecticut | 509 |
| Delaware | 78 |
| District of Columbia | 410 |
| Florida | 1,034 |
| Georgia | 286 |
| Idaho | 161 |
| Illinois | 12,482 |
| Indiana | 2,167 |
| Iowa | 647 |
| Kansas | 845 |
| Kentucky | 627 |
| Louisiana | 378 |
| Maine | 230 |
| Maryland | 764 |
| Massachusetts | 1,509 |
| Michigan | 4,513 |
| Minnesota | 839 |
| Mississippi | 75 |
| Missouri | 2,444 |
| Montana | 218 |
| Nebraska | 181 |
| Nevada | 62 |
| New Hampshire | 224 |
| New Jersey | 2,145 |
| New Mexico | 53 |
| New York | 8,013 |
| North Carolina | 735 |
| North Dakota | 117 |
| Ohio | 2,909 |
| Oklahoma | 463 |
| Oregon | 484 |
| Pennsylvania | 4,123 |
| Rhode Island | 285 |
| South Carolina | 338 |
| South Dakota | 263 |
| Tennessee | 347 |
| Texas | 1,427 |
| Utah | 198 |
| Vermont | 185 |
| Virginia | 1,615 |
| Washington | 672 |
| West Virginia | 598 |
| Wisconsin | 668 |
| Wyoming | 127 |
| **Total United States** | **61,470** |
| Total Canada | 500 |
| Other Foreign (Incl. U. S. Possessions) | 6,962 |
| **Total for World** | **68,932** |

# 102,003 Household Units MADE in December

| | HOUSEHOLD Lacquer (Exterior) Cabinets with Systems | Production† Quantity |
|---|---|---|
| | Under 3.00 cubic feet.. | 7,312 |
| 1. | 3 to 3.99 cubic feet.. | 435 |
| 2. | 4 to 4.99 cubic feet.. | 26,904 |
| 3. | 5 to 5.99 cubic feet.. | 10,708 |
| 4. | 6 to 6.99 cubic feet.. | 6,564 |
| 5. | 7 to 7.99 cubic feet.. | 3,338 |
| 6. | 8 to 9.99 cubic feet.. | 751 |
| 7. | 10 to 12.99 cubic feet.. | ..... |
| 8. | 13 to 24.00 cubic feet.. | ..... |
| **9.** | **Total Lacquer** ..... | ***56,077** |
| | **Porcelain (Exterior) Cabinets with Systems** | |
| 10. | Under 4.99 cubic feet.. | 7 |
| 11. | 5 to 5.99 cubic feet.. | 835 |
| 12. | 6 to 6.99 cubic feet.. | 555 |
| 13. | 7 to 7.99 cubic feet.. | 2,481 |
| 14. | 8 to 9.99 cubic feet.. | 889 |
| 15. | 10 to 12.99 cubic feet.. | 6 |
| 16. | 13 to 24.00 cubic feet.. | ..... |
| **17.** | **Total Porcelain** ..... | ***4,774** |
| **18.** | **Total Lines 9 and 17**.... | ***60,851** |
| 19. | Separate Systems ..... | 12,530 |
| 20. | Separate Household Low Sides ..... | 28,622 |
| **21.** | **Total Lines 18, 19, 20**... | ***102,003** |
| 22. | High Sides, ¼ hp. or Less ..... | 25,328 |
| 23. | Cabinets—No Systems... | 40,716 |
| **24.** | **Total Household** ..... | ..... |
| | **COMMERCIAL** | |
| 25. | Water Coolers with High Sides ..... | 1,776 |
| 26. | Water Coolers with No High Sides..... | 2,204 |
| 27. | Ice Cream Cabinets with High Sides..... | 528 |
| 28. | Ice Cream Cabinets with No High Sides.... | 568 |
| 29. | Beverage Coolers with High Sides ..... | 586 |
| 30. | Beverage Coolers with No High Sides..... | 163 |
| 31. | Room Coolers with High Sides ..... | 2 |
| 32. | Room Coolers with No High Sides..... | ..... |
| | **Extra High Sides** | |
| 33. | ⅛ to ½ hp. Incl..... | 5,355 |
| 34. | Above ½ to 1 hp. Incl.. | 1,397 |
| 35. | Above 1 to 5 hp. Incl... | 710 |
| 36. | Above 5 to 10 hp. Incl... | 5 |
| 37. | Above 10 hp. ..... | ..... |
| **38.** | **Total Lines 33, 34, 35, 36, and 37** ..... | ***7,472** |
| **39.** | **Total Lines 25, 27, 29, 31, and 38** ..... | ***10,364** |
| 40. | Extra Commercial Low Sides ..... | 4,328 |
| 41. | Miscellaneous Cases and Cabinets ..... | 3 |
| **42.** | **Total Commercial** ..... | ..... |
| **43.** | **Totals—Household and Commercial** ..... | ..... |

*These totals are not the sum of the breakdown figures as two companies do not report on individual items.
†One company did not supply figures on Production.

# 3,500 Refrigerators Sold in San Diego

SAN DIEGO, Calif.—Sales of electric refrigerators totaled approximately 3,500 units in San Diego county in 1934, estimates J. Clark Chamberlain, secrtary-manager of the Bureau of Radio and Electrical Appliances of San Diego County. This total is well ahead of the 1933 mark.

San Diego county's saturation point on electric refrigerators is now 31.88 per cent, in a territory of 59,000 wired homes. Last year's saturation point was 26.7 per cent, with a lower wired homes total at that time.

The county has set its 1935 quota at 4,000 units, Mr. Chamberlain says, but should go considerably above that mark.

Sales in all of Southern California exceeded 30,000 units in 1934, according to an estimate by the Bureau.

# Davidson Elected Head of South Bend Dealers

SOUTH BEND, Ind.—J. E. Davidson, Davidson Sales Co., was elected president of the South Bend Electric Refrigeration Council, consisting of refrigeration distributors and retailers, at a meeting held here recently.

Other officers elected were: Frank Collmer, Indiana Lumber Co., vice president; C. M. Sylvanus, C. M. Sylvanus Co., Inc., secretary; and Walter Lang, Radio Equipment Co., treasurer.

Tentative plans for a fourth annual electric refrigeration show in April were discussed. Members appointed to the committee in charge of the show are Walter Lang, chairman, F. E. Kilander, and Ralph Zellers.

# McRae Holding Service Schools for Dealers

TROY, N. Y.—H. A. McRae & Co., Inc., Crosley distributor for this city, is conducting a service school for dealers' service men and a six weeks' factory service school, reports R. Browd, vice president and general sales manager for the McRae company.

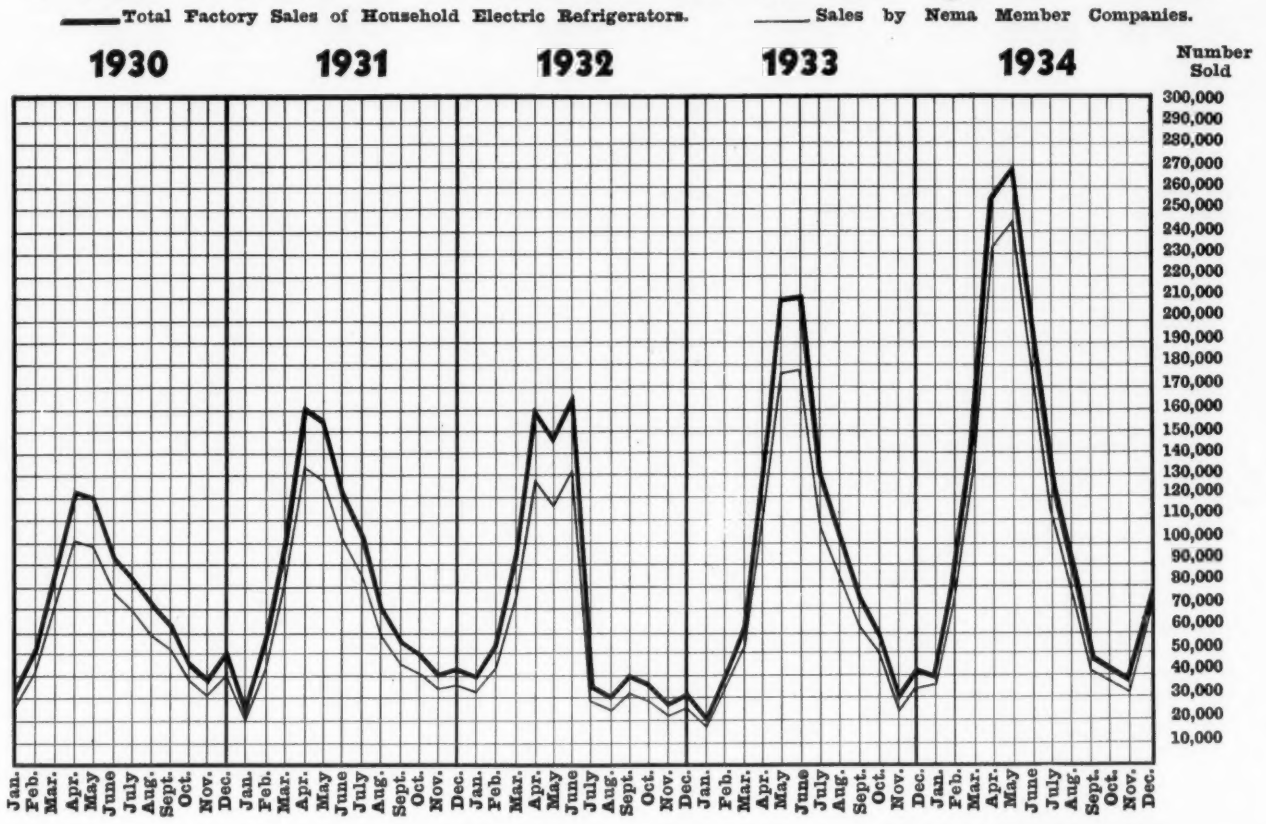
The dealers' service school is offered each Monday and in addition to the regular training offers special instruction on any Monday that is convenient to the service man.

# STOCKS of Dealers & Distributors Are Higher than December, 1933

| | HOUSEHOLD Lacquer (Exterior) Cabinets with Systems | U. S. INVENTORIES, DECEMBER, 1934 — Factory, Branch & Warehouse† Quantity | Factory, Branch & Warehouse† Value | Distributors‡ Quantity | Distributors‡ Value | Dealers Quantity | Dealers Value |
|---|---|---|---|---|---|---|---|
| | Under 3.00 cubic feet.. | 27,205 | $1,417,848 | 3,501 | $ 186,195 | 2,600 | $ 135,246 |
| 1. | 3 to 3.99 cubic feet.. | 482 | 35,156 | 388 | 24,254 | 3 | 182 |
| 2. | 4 to 4.99 cubic feet.. | 69,073 | 4,455,330 | 16,546 | 1,070,114 | 7,615 | 486,772 |
| 3. | 5 to 5.99 cubic feet.. | 54,391 | 4,609,633 | 10,565 | 850,238 | 7,626 | 608,387 |
| 4. | 6 to 6.99 cubic feet.. | 25,432 | 2,421,712 | 8,126 | 765,127 | 7,176 | 643,808 |
| 5. | 7 to 7.99 cubic feet.. | 18,844 | 2,183,563 | 4,802 | 537,026 | 3,540 | 414,023 |
| 6. | 8 to 9.99 cubic feet.. | 2,954 | 346,460 | 1,021 | 117,235 | 1,099 | 117,749 |
| 7. | 10 to 12.99 cubic feet.. | 826 | 175,405 | 105 | 21,785 | 46 | 9,514 |
| 8. | 13 to 24.00 cubic feet.. | 125 | 34,033 | 43 | 10,352 | ..... | ..... |
| **9.** | **Total Lacquer** ..... | **199,332** | **15,679,140** | ***56,515** | ***4,471,576** | **29,705** | **2,415,681** |
| | **Porcelain (Exterior) Cabinets with Systems** | | | | | | |
| 10. | Under 4.99 cubic feet.. | 9,210 | 714,344 | 1,047 | 88,287 | 999 | 77,206 |
| 11. | 5 to 5.99 cubic feet.. | 4,630 | 439,251 | 2,526 | 241,295 | 188 | 18,004 |
| 12. | 6 to 6.99 cubic feet.. | 2,238 | 227,610 | 4,189 | 475,987 | 3,013 | 323,672 |
| 13. | 7 to 7.99 cubic feet.. | 11,224 | 1,425,650 | 3,301 | 439,539 | 2,759 | 348,246 |
| 14. | 8 to 9.99 cubic feet.. | 3,046 | 499,515 | 2,119 | 325,142 | 1,150 | 166,337 |
| 15. | 10 to 12.99 cubic feet.. | 1,150 | 212,163 | 331 | 65,218 | 267 | 47,835 |
| 16. | 13 to 24.00 cubic feet.. | 1,473 | 367,593 | 349 | 90,203 | 131 | 30,217 |
| **17.** | **Total Porcelain** ..... | **32,971** | **3,886,526** | ***19,833** | ***2,291,227** | **8,506** | **1,011,517** |
| **18.** | **Total Lines 9 and 17**.... | **232,303** | **19,565,666** | ***76,354** | ***6,762,803** | **38,211** | **3,427,198** |
| 19. | Separate Systems ..... | 63,770 | 3,244,096 | ..... | ..... | ..... | ..... |
| 20. | Separate Household Low Sides ..... | 8,827 | 142,913 | 312 | 5,820 | 66 | 946 |
| **21.** | **Total Lines 18, 19, 20**... | **304,900** | ..... | ***76,666** | ..... | **38,277** | ..... |
| 22. | High Sides, ¼ hp. or Less ..... | 2,300 | 122,623 | 181 | 9,684 | 50 | 2,606 |
| 23. | Cabinets—No Systems... | 91,228 | 3,898,758 | 41 | 3,056 | 4 | 384 |
| **24.** | **Total Household** ..... | ..... | **26,974,056** | ..... | ***6,781,363** | ..... | **3,431,134** |
| | **COMMERCIAL** | | | | | | |
| 25. | Water Coolers with High Sides ..... | 9,429 | 889,374 | 3,274 | 327,836 | 441 | 38,896 |
| 26. | Water Coolers with No High Sides..... | 3,757 | 140,689 | 88 | 4,786 | 17 | 839 |
| 27. | Ice Cream Cabinets with High Sides..... | 2,101 | 299,750 | ..... | 10,434 | 3 | 450 |
| 28. | Ice Cream Cabinets with No High Sides.... | 2,642 | 341,169 | 194 | 24,533 | 9 | 880 |
| 29. | Beverage Coolers with High Sides ..... | 1,073 | 70,067 | 168 | 11,379 | 159 | 9,618 |
| 30. | Beverage Coolers with No High Sides..... | 1,191 | 70,702 | 222 | 13,419 | 64 | 5,017 |
| 31. | Room Coolers with High Sides ..... | 2,083 | 593,429 | 331 | 70,016 | 153 | 32,649 |
| 32. | Room Coolers with No High Sides..... | 2,037 | 494,183 | 266 | 30,409 | 32 | 3,393 |
| | **Extra High Sides** | | | | | | |
| 33. | ⅛ to ½ hp. Incl..... | 13,088 | 1,144,694 | 1,637 | 142,434 | 331 | 27,030 |
| 34. | Above ½ to 1 hp. Incl.. | 4,927 | 641,136 | 1,021 | 135,515 | 242 | 31,241 |
| 35. | Above 1 to 5 hp. Incl... | 3,243 | 688,549 | 758 | 158,560 | 103 | 52,217 |
| 36. | Above 5 to 10 hp. Incl... | 108 | 65,397 | 8 | 4,772 | ..... | ..... |
| 37. | Above 10 hp. ..... | 112 | 104,048 | ..... | ..... | ..... | ..... |
| **38.** | **Total Lines 33, 34, 35 36 and 37** ..... | **21,478** | ..... | ***3,540** | ..... | **676** | ..... |
| **39.** | **Total Lines 25, 27, 29, 31, and 38** ..... | **36,164** | ..... | ***7,383** | ..... | **1,432** | ..... |
| 40. | Extra Commercial Low Sides ..... | 24,288 | 834,719 | 3,247 | 97,539 | 686 | 20,629 |
| 41. | Miscellaneous Cases and Cabinets ..... | 643 | 188,701 | 138 | 42,829 | 18 | 5,726 |
| **42.** | **Total Commercial** ..... | ..... | **6,566,612** | ..... | **1,074,461** | ..... | **228,585** |
| **43.** | **Totals—Household and Commercial** ..... | ..... | **$33,540,668** | ..... | ***$7,855,824** | ..... | **$3,659,719** |

*These totals are not the sum of the breakdown figures as two companies do not report on individual items.
†Two companies do not supply figures on Factory, Branch, and Warehouse Inventories.
‡Three companies do not supply figures on Distributors Inventories.

## 5-Year Record of Household Electric Refrigerator Sales




## Household Market Saturation 28.2%

(*Concluded from Page 1, Column 5*)

June at which time the manufacturing activities were taken over by the Dallas E. Winslow interests of Detroit. Wurlitzer Mfg. Co. submitted sales figures until June when it was decided to discontinue refrigeration activities of the company.

The Nema total includes refrigeration units manufactured for Fairbanks-Morse Home Appliances, Inc., Major Appliance Corp., Montgomery Ward & Co., Potter Refrigerator Corp., Sears, Roebuck & Co., and Truscon Steel Co.

In addition to the total shown for companies listed above, the all-industry sales figure also includes actual figures or estimates for the following non-Nema manufacturers of household refrigeration equipment: Brunner Mfg. Co.; Copeland Refrigeration Corp.; Dayton Refrigeration Corp.; Domestic Industries, Inc.; E. S. Matthews, Inc. (Electro-Kold); Gilfillan Bros., Inc.; General Household Utilities Co. (Grunow); Ilg Electric Ventilating Co.; Landers, Frary & Clark; Liberty Refrigeration Corp.; O'Keefe & Merritt Co.; Parker Mfg. Co.; Sanitary Electric Corp.; The Starr Co. (Starr-Freeze); Williams Oil-O-Matic Heating Corp. (Ice-O-Matic); and Zerozone Refrigeration Corp. Apex, Jomoco, Merchant & Evans, and Sparks-Withington Co., although Nema members, did not report their sales figures to the association during 1934 but estimates for these companies are also included in the industry total figure.

With the addition of the 1934 figure, sales to date reach a total of 7,275,000 units. After making necessary adjustments to allow for stocks in the hands of dealers and distributors, exports to date, and obsolescence and replacement ELECTRIC REFRIGERATION NEWS has estimated that about 5,825,000 household electric refrigerators are in use in the United States. This indicates that about 28.2 per cent of the 20,693,984 wired homes in the country are now equipped with electric refrigerators.

### Total Sales by Years

Annual sales of household refrigerators by all U. S. manufacturers since 1920.

| Year | No. of Units | Average Price | Retail Value |
|---|---|---|---|
| To 1920 | 10,000 | $600 | $ 6,000,000 |
| 1921 | 5,000 | 550 | 2,750,000 |
| 1922 | 12,000 | 525 | 6,300,000 |
| 1923 | 18,000 | 475 | 8,550,000 |
| 1924 | 30,000 | 450 | 13,500,000 |
| 1925 | 75,000 | 425 | 31,875,000 |
| 1926 | 210,000 | 390 | 81,900,000 |
| 1927 | 390,000 | 350 | 136,500,000 |
| 1928 | 560,000 | 334 | 187,040,000 |
| 1929 | 840,000 | 292 | 245,280,000 |
| 1930 | 850,000 | 275 | 233,750,000 |
| 1931 | 965,000 | 258 | 248,970,000 |
| 1932 | 840,000 | 195 | 163,800,000 |
| 1933 | 1,080,000 | 170 | 183,600,000 |
| 1934 | 1,390,000 | 172 | 239,080,000 |
| **Total** | **7,275,000** | ... | **$1,788,895,000** |

### 1934 Sales by Months

| | 1934 Monthly Sales | 1934 Cumulative Sales |
|---|---|---|
| **January Totals** | **38,000** | **38,000** |
| Nema Only | 34,514 | 34,514 |
| **February Totals** | **82,500** | **120,500** |
| Nema Only | 75,007 | 109,521 |
| **March Totals** | **149,000** | **269,500** |
| Nema Only | 135,470 | 244,991 |
| **April Totals** | **255,400** | **524,900** |
| Nema Only | 232,124 | 477,115 |
| **May Totals** | **268,600** | **793,500** |
| Nema Only | 244,178 | 721,293 |
| **June Totals** | **187,600** | **981,100** |
| Nema Only | 170,544 | 891,837 |
| **July Totals** | **122,400** | **1,103,500** |
| Nema Only | 111,313 | 1,003,150 |
| **August Totals** | **87,700** | **1,191,200** |
| Nema Only | 79,705 | 1,082,855 |
| **September Totals** | **46,300** | **1,237,500** |
| Nema Only | 42,120 | 1,124,975 |
| **October Totals** | **41,600** | **1,279,100** |
| Nema Only | 37,854 | 1,162,829 |
| **November Totals** | **35,700** | **1,314,800** |
| Nema Only | 32,458 | 1,195,287 |
| **December Totals** | **75,800** | **1,390,600** |
| Nema Only | 68,934 | 1,264,221 |

## Department Store Sales Show Gain in January

WASHINGTON, D. C.—That department store sales in January showed a gain of 4 per cent over the same period last year is shown in a recent report of the Federal Reserve Board, covering 503 stores in 237 cities.

Percentage changes by Federal Reserve districts as compared with the same month last year as as follows:

Boston, —4; New York, unchanged; Philadelphia, 2; Cleveland, 14; Richmond, 6; Atlanta, 6; Chicago, 9; St. Louis, 2; Minneapolis, unchanged; Kansas City, 5; Dallas, 9; San Francisco, 11.

## Westinghouse Plans to Use Technicolor Films

HOLLYWOOD, Calif.—Six Westinghouse films, produced in three-color Technicolor, will be released March 18 through the General Screen Advertising, Inc., which has approximately 5,400 motion picture theaters under contract for the showing of screen advertising subjects.

Each film of the Westinghouse series has a running time of one minute, including a musical introduction and dealer signature. Rates for showing at local theaters are based on the film's length and attendance.

Included in the features covered are the revolving shelf, "Eject-o-cube" ice tray, frozen desserts, etc.

## Boston Department Store Handles Crosley Line

BOSTON—The Gilchrest Co., department store here, is now handling the complete line of Crosley electric refrigerators, reports David C. Rockman, general manager, George Collins Co., Crosley distributor in Boston.

## Refrigerator Exports for November, 1934

November, 1934, Shipments Reported by the Bureau of Foreign and Domestic Commerce, Washington, D. C.

| | Electric Household Refrigerators | | Electric Commercial Refrigerators Up to 1 Ton | | Parts for Electric Refrigerators |
|---|---|---|---|---|---|
| | Number | Value | Number | Value | Value |
| Austria | 27 | $ 1,675 | 7 | $ 864 | $ 625 |
| Belgium | 91 | 8,792 | 134 | 10,142 | 7,566 |
| Bulgaria | ... | ... | 1 | 650 | ... |
| Czechoslovakia | 13 | 1,350 | 28 | 4,243 | 2,171 |
| Denmark | ... | ... | 18 | 1,598 | 662 |
| Finland | 13 | 1,107 | 3 | 322 | 193 |
| France | 1,270 | 116,147 | 745 | 47,047 | 52,199 |
| Germany | 9 | 640 | ... | ... | 3,072 |
| Gibraltar | 1 | 86 | 1 | 93 | 108 |
| Greece | 103 | 9,149 | 1 | 206 | 122 |
| Irish Free State | ... | ... | 68 | 10,384 | 2,604 |
| Italy | 35 | 3,008 | 7 | 753 | 2,440 |
| Malta, Gozo, and Cyprus | 5 | 378 | ... | ... | 12 |
| Netherlands | 29 | 2,186 | 20 | 2,594 | 2,384 |
| Norway | 11 | 845 | 4 | 435 | 854 |
| Poland and Danzig | ... | ... | 1 | 326 | 112 |
| Portugal | 10 | 603 | ... | ... | 396 |
| Rumania | 1 | 78 | ... | ... | 190 |
| Spain | 4 | 280 | ... | ... | 2,746 |
| Sweden | 32 | 885 | 24 | 2,186 | 5,024 |
| Switzerland | 36 | 2,280 | 17 | 2,207 | 35,147 |
| United Kingdom | 253 | 11,836 | 34 | 5,785 | 18,062 |
| Canada | 74 | 6,360 | 2 | 208 | 19,783 |
| British Honduras | ... | ... | ... | ... | 20 |
| Costa Rica | 8 | 1,049 | ... | ... | ... |
| Gautemala | 5 | 530 | ... | ... | 63 |
| Honduras | 15 | 1,643 | ... | ... | 1 |
| Nicaragua | 8 | 790 | ... | ... | 36 |
| Panama | 81 | 12,772 | 10 | 1,166 | 2,534 |
| Salvador | 15 | 1,640 | ... | ... | 27 |
| Mexico | 146 | 14,140 | 5 | 1,520 | 3,531 |
| Newfoundland and Labrador | ... | ... | ... | ... | 6 |
| Bermudas | 14 | 1,425 | ... | ... | 657 |
| Barbados | 7 | 748 | 2 | 1,403 | ... |
| Jamaica | 17 | 1,957 | 5 | 649 | 84 |
| Trinidad and Tobago | 9 | 984 | ... | ... | 35 |
| Other British West Indies | 12 | 1,248 | ... | ... | 48 |
| Cuba | 103 | 11,815 | 6 | 1,136 | 5,549 |
| Dominican Republic | 50 | 4,972 | 3 | 515 | 262 |
| Netherland West Indies | 34 | 3,533 | 2 | 589 | 735 |
| French West Indies | 31 | 2,956 | ... | ... | 47 |
| Haiti, Republic of | 9 | 1,176 | 2 | 248 | 82 |
| Virgin Islands of U. S. | ... | ... | 1 | 273 | 24 |
| Argentina | 218 | 11,234 | 56 | 4,816 | 13,879 |
| Brazil | 1,710 | 120,460 | 21 | 3,132 | 4,465 |
| Chile | 24 | 2,262 | ... | ... | 68 |
| Colombia | 63 | 5,578 | ... | ... | 276 |
| Ecuador | 6 | 637 | ... | ... | 1 |
| British Guiana | 13 | 1,147 | 1 | 100 | 57 |
| Surinam | 10 | 1,266 | ... | ... | 131 |
| Peru | 48 | 3,913 | 10 | 2,561 | 769 |
| Uruguay | 7 | 811 | ... | ... | 610 |
| Venezuela | 62 | 6,583 | 8 | 3,035 | 383 |
| Aden | ... | ... | ... | ... | 15 |
| British India | 187 | 14,966 | 22 | 2,767 | 7,817 |
| British Malaya | 58 | 7,199 | 3 | 546 | 2,044 |
| Ceylon | 38 | 2,972 | ... | ... | 995 |
| China | 127 | 11,045 | 5 | 1,989 | 1,078 |
| Netherland East Indies | 417 | 41,868 | 38 | 5,324 | 2,676 |
| French Indo-China | 18 | 2,290 | 1 | 145 | 641 |
| Hong Kong | 9 | 927 | ... | ... | 2,072 |
| Iraq | 1 | 195 | ... | ... | ... |
| Japan | 7 | 1,124 | 10 | 1,387 | 6,974 |
| Kwantung | 3 | 459 | ... | ... | ... |
| Palestine | 26 | 1,832 | 2 | 370 | 1,427 |
| Philippine Islands | 91 | 7,810 | 8 | 3,115 | 936 |
| Siam | 7 | 645 | ... | ... | 86 |
| Syria | ... | ... | 3 | 1,225 | 1 |
| Turkey | 7 | 903 | ... | ... | 660 |
| Other Asia | ... | ... | ... | ... | 274 |
| Australia | 909 | 54,565 | ... | ... | 23,949 |
| New Zealand | 134 | 10,480 | 75 | 7,753 | 3,320 |
| Belgian Congo | ... | ... | ... | ... | 2 |
| British East Africa | 25 | 2,922 | ... | ... | 56 |
| Union of South Africa | 2,682 | 245,640 | 63 | 13,803 | 13,896 |
| Other British South Africa | 17 | 1,347 | ... | ... | 61 |
| Gold Coast | 7 | 538 | ... | ... | 253 |
| Nigeria | 26 | 2,601 | ... | ... | 154 |
| Other British West Africa | 4 | 488 | ... | ... | 54 |
| Egypt | 33 | 3,439 | ... | ... | 206 |
| Algeria and Tunisia | 6 | 601 | 7 | 669 | 892 |
| Madagascar | 9 | 928 | ... | ... | ... |
| Other French Africa | 28 | 2,768 | ... | ... | 152 |
| Italian Africa | 13 | 1,058 | ... | ... | ... |
| Morocco | 8 | 618 | ... | ... | 63 |
| Mozambique | 20 | 1,722 | 2 | 217 | 1,858 |
| Canary Islands | 22 | 1,932 | ... | ... | ... |
| **Total** | **9,681** | **$310,842** | **1,486** | **$150,796** | **$261,131** |
| Shipments to Hawaii | 416 | 41,245 | 14 | 2,213 | 3,895 |
| Puerto Rico | 165 | 20,881 | 8 | 1,512 | 2,366 |

# PATENTS

## *Issued Feb. 5, 1935*

1,989,772. HEAT EXCHANGE APPARATUS. Charles Robinson, Trent Works, Burton-on-Trent, England. Application Dec. 30, 1933. Serial No. 704,688. In Germany Dec. 15, 1933. 1 Claim. (Cl. 257—187.)

In a body for heat exchange apparatus, the combination of a vertical partition plate, tubes secured to opposite sides of said plate, said tubes having each a flat base secured to the partition plate, beaded edges of substantially part circular form adjacent the base, and converging sides, said tubes being disposed adjacent one another with opposed beaded edges almost in contact to provide an exposed substantially continuous and horizontally corrugated tube surface.

1,989,873. APPARATUS FOR AUTOMATICALLY FORMING REFRIGERANT BLOCKS. David A. Marcus and Walter O. Ogier, Jr., Pasadena, Calif., assignors to Nu-Ice Co., Los Angeles, Calif., a corporation of Nevada. Application May 21, 1929. Serial No. 364,738. 3 Claims. (Cl. 62—121.)

1. A device of the character described, including: walls forming an expansion chamber; means for accumulating solidified gas within said expansion chamber; a ram movable across a portion of said expansion chamber, there being walls providing a recess into which said ram is retracted; a casing projecting from said expansion chamber in alignment with the movement of said ram, said casing having an end opening; means for removing gas from said casing during the compression of solidified gas therein by said ram; a closure member cooperative with the end opening of said casing; fluid operated means for moving said closure member relative to said opening of said casing; and fluid actuated means for moving said ram towards said casing.

1,989,874. APPARATUS FOR FORMING REFRIGERANT BLOCKS. David A. Marcus, Los Angeles, and Walter W. Ogier, Jr., Pasadena, Calif., assignors to Nu-Ice Company, Los Angeles., Calif., a corporation of Nevada. Application Nov. 1, 1930. Serial No. 492,762. 1 Claim. (Cl. 62—121.)

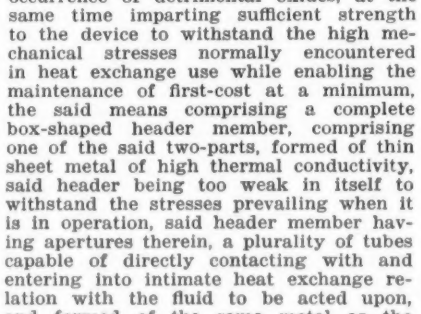
In a device for changing liquid carbon dioxide to carbon dioxide snow, the combination comprising: a casing having a pair of chambers in air-tight and direct communication with each other; means for expanding liquid carbon dioxide in one of said chambers to form carbon dioxide snow therein; means for closing the opening between said chambers; and snow compressing means united and in direct communication with the other of said chambers.

1,989,996. HEAT EXCHANGE UNIT. Robert Mautsch, Brussels, Belgium, assignor to Manufacture Generale Metallurgique, Societe Anonyme, Brussels, Belgium, a company of Belgium. Application Jan. 5, 1932. Serial No. 584,866. In Belgium Feb. 26, 1931. 5 Claims. (Cl. 257—248.)

5. A jointed, two-part heat exchange device, consisting of means for the almost instantaneous exchange of heat between the device and the fluid to be acted upon while avoiding electrolytic action at the joint between the said two-parts and the occurrence of detrimental oxides, at the same time imparting sufficient strength to the device to withstand the high mechanical stresses normally encountered in heat exchange use while enabling the maintenance of first-cost at a minimum, the said means comprising a complete box-shaped header member, comprising one of the said two-parts, formed of thin sheet metal of high thermal conductivity, said header being too weak in itself to withstand the stresses prevailing when it is in operation, said header member having apertures therein, a plurality of tubes capable of directly contacting with and entering into intimate heat exchange relation with the fluid to be acted upon, and formed of the same metal as the header, and comprising the other of the said two parts, jointed to the first part, said tubes being sufficiently thin to enter into almost instantaneous heat exchange with said fluid, said tubes each having one end engaged in an aperture of said header member, and an outer casing strong enough to resist the mechanical stresses which prevail, and formed of an inexpensive metal cast in substantially fluid tight manner about only the ends of said tubes and about the joint between the ends of the tubes and the adjacent portions of said sheet metal header member, and at least partly surrounding the remaining portions of said header member, said tubes projecting outwardly from said casing.

1,989,997. SYSTEM OF HEATING AND COOLING. Clark T. Morse and Edward L. Hogan, Detroit, Mich., assignors to American Blower Corp., Detroit, Mich., a corporation of Delaware. Application Feb. 12, 1931. Serial No. 515,368. 5 Claims. (Cl. 257—8.)

1. In a method of controlling the temperature of an enclosure by the use of either a heated or cooled medium, storing



1,989,997

said medium, circulating said cooled or heated medium through an air stream without direct contact therewith, causing the circulation of said air stream in a single direction for both heated or cooled medium to and from the enclosure and modifying the temperature of the stored medium by selectively heating or cooling said stored medium to control the temperature of the circulated air.

1,990,069. METHOD AND APPARATUS FOR MAKING FINNED ARTICLES. Charles W. Gordon, Munster, Ind., assignor to The Superheater Co., New York, N. Y. Application June 5, 1933. Serial No. 674,301. 2 Claims. (Cl. 219—10.)

1. The method of forming a projection of weld metal on a foundation piece comprising arranging close to said piece spaced jaws of material not well adapted to form a weld by the arc welding process with the weld metal to be used for the projection, building up said projection on said piece between said jaws by the arc welding process, and maintaining the jaws in insulated relation to the foundation piece.

1,990,094. SYSTEM OF CONDITIONING AIR AND OTHER GASES AND APPARATUS THEREFOR. Walter T. Ray, Brewster, N. Y., assignor, by mesne assignments, to William W. Varney, Baltimore, Md. Application Jan. 31, 1931. Serial No. 512,609. 5 Claims. (Cl. 62—176.)

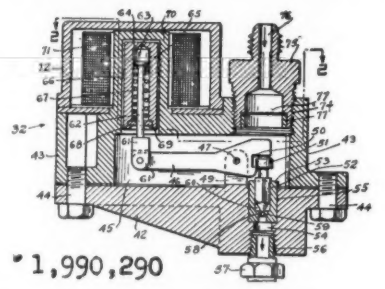
1. A system of air conditioning consisting of cooling a body of initial air adiabatically, then by means of this cooled air treating another body of initial air anhydrously to cool the same, then treating said other body of air adiabatically.

1,990,184. POWER TRANSMITTING DEVICE. Harold A. Greenwald, Detroit, Mich., assignor by mesne assignments, to Kelvinator Corp., Detroit, Mich., a corporation of Michigan. Application Sept. 8, 1930. Serial No. 480,562. 5 Claims. (Cl. 74—571.)

5. In a power transmitting device, the combination with an eccentric having a fixed axis of rotation, a second eccentric rotatably mounted with respect to the eccentric aforesaid, means operatively connected with the first eccentric for rotating the same, a third eccentric bearing a fixed relation to the first eccentric and rotatable therewith as a unit, a weight extending outwardly from the axis of rotation of the first eccentric and adapted to be reciprocated by the third eccentric, and driving means between the weight and second mentioned eccentric, said driving means including a radially slidable connection.

1,990,290. REFRIGERATING SYSTEM. Lester U. Larkin, Atlanta, Ga., assignor to Larkin Refrigerating Corp., Atlanta, Ga., a corporation of Georgia. Application Sept. 20, 1932. Serial No.634,049. 3 Claims. (Cl. 62—2.)

1. In a refrigerating system, a base, a casing detachably mounted on said base and having a chamber formed therein, a



1,990,290

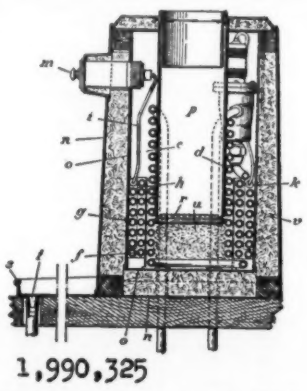
lever arranged in said chamber and pivoted between its ends to said base, an inlet and an outlet formed in said casing and base, respectively, an armature pivoted on one end of said lever, a solenoid fixed in said casing around said armature, and a needle valve controlling the flow of liquid through said outlet, said lever being operable by gravity to hold the needle valve in open position and operable by the energization of said solenoid acting on said armature to force said needle valve into closed position.

1,990,324. AIR CONDITIONING SYSTEM. Wallace H. Herdlein, St. Louis, Mo., assignor to American Car & Foundry Co., New York, N. Y., a corporation of New Jersey. Application Dec. 20, 1933. Serial No. 703,202. 17 Claims. (Cl. 257—7.)

1. In an air conditioning system for enclosures, a chamber holding water ice, an air conditioning cabinet having a spray chamber, nozzles in said chamber, pump means operative in response to variations in humidity conditions withing the enclosure for circulating water between the ice chamber and spray nozzles, a heat exchange coil in the cabinet adapted to receive water from the ice chamber, and valve means operative in response to variations in pressure of the water circulated to the spray nozzles for controlling passage of water to the heat exchange coil thereby maintaining proper functioning of the spray nozzles.

1,990, 325. DISPENSING DEVICE. Henry Hopkes, Scharfenstein, Germany. Application May 16, 1933. Serial No. 671,299. In Germany Jan. 6, 1933. 1 Claim. (Cl. 62—141.)

A self-contained beverage dispensing device comprising a closed container having a cold storage space, an evaporator coil

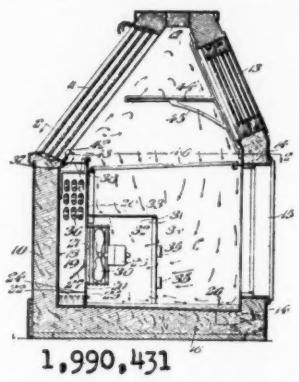


1,990,325

surrounding said space and adapted to receive a refrigerating medium, a plurality of separate beverage conducting pipes in different spaced relationship to said evaporator coil, and a dispensing tap provided on the outwardly projecting end of each of said pipes.

1,990,431. REFRIGERATING SHOW CASE. Roland E. Frederick, Jenkintown, Pa. Application April 13, 1932. Serial No. 604,925. 15 Claims. (Cl. 62—89.5.)

12. A refrigerating show case comprising means defining a substantially vertical channel toward the front of the



1,990,431

case, a cooling unit in said channel, blower means for forcing air vertically upward through the channel, a deflecting shield in the path of air passing through the channel arranged to deflect a portion at least laterally of its path to cause dispersion of the air stream rearwardly of the case, and guide means for leading said air stream to supply said blower in a closed circulation.

### REISSUE

19,453. AIR CONDITIONING APPARATUS FOR PASSENGER CARS. Jesse H. Davis, Baltimore, Md., assignor to B. F. Sturtevant Co., Boston, Mass., a corporation of Massachusetts. Original No. 1,943,516, dated Jan. 6, 1934. Serial No. 508,997, Jan. 15, 1931. Application for reissue Feb. 8, 1934. Serial No. 710,380. 11 Claims. (Cl. 62—117.)

10. Apparatus for conditioning the air in a railway passenger car comprising a cooling chamber, a refrigerant compressor for supplying refrigerant which acts to cool the air passing through said chamber, a high voltage motor for driving said compressor, a fan for forcing the air to be cooled through said chamber and into the space occupied by the passengers, a low voltage motor for driving said fan, an axle driven low voltage generator and a battery charged thereby for energizing said fan motor, and wayside connections for connecting said high voltage motor to an outside electrical source as when said car is standing in a station.

## 200 Expected at Sparton Meeting in Philadelphia

PHILADELPHIA — Approximately 200 dealers are expected to attend the meeting to be held Feb. 20 at the Ritz-Carlton hotel here, by the Philadelphia Motor Accessories Co., distributor for Sparton radios and refrigerators in the Philadelphia-Allentown territory.

The meeting is in charge of Dave Weiss, president of the distributorship. Howard Clark district representative for Cparks-Withington Co., will present the 1935 line of Sparton models.

## Group Subscription Rates

**The following special rates are for PAID-IN-ADVANCE subscriptions only in the United States and Possessions and Pan-American Postal Union Countries. Charge orders are billed at the single-subscription rate, regardless of number. Papers will be mailed to individual addresses.**

| | Electric Refrigeration News (weekly) | 1935 Refrigeration Directory and Market Data Book (2 volumes) | Both Electric Refrigeration News and Refrigeration Directory |
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Business News Publishing Co.
5229 Cass Ave., Detroit, Mich. Date.....

☐ Enter my subscription to Electric Refrigeration News for one year (52 issues).
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In Care of .....

Street Address .....City and State.....

We sell the .....refrigerator and .....
(Please indicate other products or principal line of business.)
2-20-35.

# QUESTIONS

## Data on Refrigerants

*No. 2076* (Manufacturer, Illinois)—"Can you tell us where we can obtain a handbook or information covering all of the refrigerants now used by various refrigeration equipment manufacturers?

"We are particularly interested in obtaining information on Freon.

"We have calls for valves for use in connection with these various refrigerants and must know their characteristics in order to supply equipment made of correct materials. If you know where such a handbook can be obtained, or can advise us where we can obtain this information we will be very much indebted to you."

*Answer*: An article, "Characteristics of Freon Refrigerant," was published on pages 8, 9, and 10 of the March 21, 1934, issue of ELECTRIC REFRIGERATION NEWS.

An article by A. H. Eustis, president of the Virginia Smelting Co., comparing the characteristics of various refrigerants, was published in the Feb. 21, 1934, issue of ELECTRIC REFRIGERATION NEWS.

The Virginia Smelting Co. has just published a booklet, "Tabulated Properties of Various Refrigerants," which perhaps you can obtain by addressing the Virginia Smelting Co., West Norfolk, Va.

## Hand-Trucks for Deliveries

*No. 2077* (Reader, Michigan)—"We are interested in equipment of some kind for delivering electric refrigerators to the home. There is one made where you strap two wheels to each side of the refrigerator, and it also gives you handles for carrying the unit. Would you happen to have the address and name of the firm who manufactures this equipment?"

*Answer*: We believe the equipment you have reference to is made by the Self-Lifting Piano Truck Co., Findlay, Ohio. By writing direct to this company you can get complete information.

## Evaporator Specifications

*No. 2078* (Manufacturer, West Virginia)—"We are most desirous of obtaining some kind of a book that will deliver knowledge as to the freezing unit in refrigerators. We have an elongated pan, that displaces from two to three ice cube freezing pans, placed in the freezing unit of refrigerators. On the front of our elongated pan, we have a small motor, and we must determine the amount of space between the door and the front of the freezing chamber, which would give us a displacement allowance for the motor.

"To know these facts, and obtain them from a book of specifications on inside and outside of freezing unit compartments, that would give overall dimensions of ice cube trays, we would have to buy a refrigerator of every make to permit us to decide what we should make as a standard unit."

*Answer*: There are no published specifications or other published information on household electric refrigerators which give the dimensions of the freezing units, or the distance between the freezing units and the door.

You might obtain this information by writing to the manufacturers direct, or, by taking actual measurements of floor samples carried by refrigeration dealers in your local community.

Your problem involves a number of factors which will probably require expert refrigeration engineering advice. For example, the matter of placing a motor, or any other heat-producing device within a household electric refrigerator, is a problem which must be given serious consideration.

## Bottle Coolers

*No. 2079* (Distributor, Missouri)—"Will you kindly place us in touch with the firm manufacturing bottle coolers that might be looking for a distributing outlet in the St. Louis territory. We are contemplating again becoming active in the appliance field.

"The type of cooler we desire is a commercial type to be used in marketing bottled soda water and other bottled drinks."

## Coin-Meter Makers

*No. 2080* (Distributor, New York)—"Will you kindly let us have the name and address of the manufacturers of Meterice or other such devices of similar nature used in promoting the sale of refrigerators on a small daily payment plan?"

*Answer*: Manufacturers of coin meter devices are as follows:
General Electric Co., Schenectady, N. Y.
Coin-A-Day, Eltime Clock Co. Div.
Electric Auto-Lite Co., Toledo, Ohio.
Budgetklok Co.
915 Washington Ave., Minneapolis, Minn.
International Register Co.
15 S. Throop St., Chicago, Ill.
Landis & Gyr, Inc.
104 Fifth Ave., New York, N. Y.
Mills Novelty Co.
4100 Fullerton Ave., Chicago, Ill.
Seeburg Corp., 1510 Dayton St., Chicago, Ill.
Zell Products Corp.
536 Broadway, New York, N. Y.
Frank Pierman, Ottawa, Ohio.

## Applications Data

*No. 2081* (Utility, Louisiana)—"I have been delegated to gather information on "New Methods and Applications of Air Conditioning" in connection with the Edison Electric Institute Air Conditioning Committee, of which I am a member. Details of the required information are as follows:

"'Each year sees new methods developed and new applications of air conditioning which are of wide interest.

"'This study contemplates collection of such uses and applications, together with a description of the equipment and the benefits derived.'

"I am wondering whether you could give me any references with whom I could take this matter up and get some help. In the last issue of your paper, I clipped a very interesting story under the caption 'Air Conditioning Aids Quality and Production of Chewing Gum.' However, the job is quite an all embracing one and covers a great deal of territory, and I thought you might be able to give me some advice as to how to go about it."

*Answer*: We published as an answer to Query No. 2012 on page 15 of the Jan. 2, 1935, issue of ELECTRIC REFRIGERATION NEWS, references on all the various classifications of air-conditioning applications of which we have knowledge.

## Counter Freezer

*No. 2082* (Manufacturer, New York)—"We are very much interested in securing a list of manufacturers who are now making the counter-type freezer."

*Answer*: The following manufacturers make counter-type ice cream freezers:
Taylor Freezer Corp., Beloit, Wis.
Mills Novelty Co.
4100 Fullerton Ave., Chicago, Ill.
C. V. Hill & Co., Trenton, N. J.
Russ Soda Fountain Co.
5700 Walworth Ave., Cleveland, Ohio.

## Refrigerator Jobbers

*No. 2083* (Advertising agency, Indiana)—"We are very anxious to get hold of a list of the jobbers of electric refrigerators in the United States. Could you furnish us with such a list, or tell us where we could get one?"

*Answer*: There is no published list of electric refrigeration distributors. All of the leading manufacturers have furnished these names to us for subscription promotion purposes, but with the distinct understanding that the list would not be sold or made available to others.

The only way which we know of to get a correct list is direct from the manufacturers.

## Gold Mine Air Cooler

*No. 2084* (Reader, Michigan)—"You had a news item in one of your recent papers on the refrigeration system that a gold mine in South Africa was planning on installing. Could you please advise as to the cost of one of these papers as I am very desirous of getting this item."

*Answer*: This story was published on page 15 of the Sept. 12, 1934, issue of ELECTRIC REFRIGERATION NEWS.

Back issues of the NEWS can be secured at a cost of 10 cents each by addressing Business News Publishing Co., 5229 Cass Ave., Detroit, Mich.

## Service Manual

*No. 2085* (Service man, Canal Zone)—"I should like to inquire if your company publishes a household refrigeration service handbook, and if so, what is the cost of same?

"If you do not publish the above could you tell me where it could be secured?"

*No. 2086* (Service man, Iowa)—"I have been servicing the ammonia type refrigerators for the past eight years, and I would like to get some information on the service of the small systems and the newer commercial types."

*Answer*: We are actively working on plans for a MASTER SERVICE MANUAL, but at the present time we cannot make a definite announcement regarding it.

In the meantime we refer you to the series of articles on "orphan" makes of electric refrigerators which were published last year (a list of the issues in which the articles appear can be found on page 10 of this issue of ELECTRIC REFRIGERATION NEWS. The principles of operation covered in these articles are characteristic of most of the refrigeration systems in operation today.

# CLASSIFIED

RATES: Fifty words or less, one insertion $2.00, additional words four cents each. Three insertions $5.00, additional words ten cents each.

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REPLIES to advertisements with Box No. should be addressed to Electric Refrigeration News, 5229 Cass Ave., Detroit, Mich.

### POSITIONS AVAILABLE

NATIONAL Refrigeration Corp., Dayton, Ohio, manufacturer of complete household line comprising five models has real proposition for manufacturers' agents now contacting hardware, furniture or radio accounts. National sells direct to dealer. Prices low, quality high. When writing give past records of accomplishment. National Refrigeration Corp., 924 East Monument, Dayton, Ohio.

PROMINENT manufacturer desires men experienced in Air Conditioning and Refrigeration in Commercial sizes. One capable sales engineer for factory office. Also one district representative who can take charge of a large western territory with headquarters in St. Louis. Must be able to organize and supervise branch office sales and to secure and supervise distributors. Engineering knowledge and previous successful experience in this type of work essential. Opportunity for profitable and permanent connection for right man. Box 678, Electric Refrigeration News.

### EQUIPMENT FOR SALE

HIGHEST quality of isobutane ever sold. We ship isobutane in your cylinders. Five pounds $1.50 per pound, ten pounds $1.35, 25 pounds $1.10, 50 pounds $1.00, 80 pounds $.80. Special quotation on 500 pounds or over. Order now before the rush. Standard Refrigeration Co., 1148 Dohrman St., McKees Rocks, Pa.

APPROXIMATELY 300 four-blade Iroquois Rotary Compressors, completely assembled, tested and run-in. Complete with fly-wheel. Also 300 motor pulleys, satisfactory for use with ethyl chloride. Buffalo House Wrecking and Salvage Co., 479 Walden Ave., Buffalo, N. Y.

A WELL-ESTABLISHED independent refrigeration sales and service corporation, with completely equipped showroom and shop for rebuilding, situated in the metropolitan area of New York City, 4½ years in the same location, for sale with complete stock of parts and units. Box 677, Electric Refrigeration News.

FOR SALE: Rebuilt Frigidaire floats, $2.00. Frigidaire Model KN flapper valves, $1.50. Kelvinator low and high pressure mercoids complete, $6.00; same with mouse trap switch, $5.00 complete. Flooded type coils, Frigidaire 88F, 96F, $12.00. Frigidaire N compressors, $75.00. Every item 100% guaranteed. Refrigeration Maintenance Company, 719 Atlantic Ave., Brooklyn, New York.

### EQUIPMENT WANTED

WANTED—Discarded or non-operating Hermetically sealed Majestic Units for cash. Or will replace such units with repaired units at lowest prices. Write full details of what you have. Carl John Stein Co., 122 W. Illinois St., Chicago.

### SCHOOLS

MEN: Train for Refrigeration and Air Conditioning, at home, using same text material you would use in best resident school. Supervised individual instruction under licensed teacher with Doctor's degree. Shoeck School, Alton, Ill.

### REPAIRS

HALECTRIC thermostat repair service. B & B, G.E., Cutler-Hammer, Penn, Ranco, Tag., etc. Expansion valves repaired. Gas service, Ethyl, Methyl, Iso-Butane, Sulphur. Your cylinder or ours. Competitive prices. Halectric Laboratory, 1793 Lakeview Road, Cleveland, Ohio.

### PATENTS

HAVE YOUR patent work done by a specialist. I have had more than 25 years' experience in refrigeration engineering. Prompt searches and reports. Reasonable fees. H. R. Van Deventer (ASRE), Patent Attorney, 342 Madison Avenue, New York City.